.

THE TAMIL NADU Dr.M.G.R.MEDICAL UNIVERSITY
CHENNAI - 600 032.

SECOND M.B.B.S. DEGREE COURSE
REVISED (NON-SEMESTER) REGULATIONS - 2005

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THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY
CHENNAI

REGULATIONS FOR THE BACHELOR OF MEDICINE AND BACHELOR OF SURGERY DEGREE COURSE

In exercise of the powers conferred by Section 44 of the Tamil Nadu Dr. M.G.R. Medical University, Chennai, Act, 1987 (Tamil Nadu Act 37 of 1987), the Standing Academic Board of the Tamil Nadu Dr. M.G.R. Medical University hereby makes the following regulations:

1. SHORT TITLE AND COMMENCEMENT

These regulations shall be called "REGULATIONS FOR THE SECOND M.B.B.S. DEGREE COURSE – 2005 (NON-SEMESTER) OF THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI".

These regulations are applicable to the students who are admitted to the First M.B.B.S. Degree course from the academic year 2005 - 2006 onwards and promoted to second M.B.B.S. Degree course.

The regulations framed are subject to modification as made by the Standing Academic Board from time to time.

2. GENERAL CONSIDERATIONS AND TEACHING APPROACH

1. Graduate medical curriculum is oriented towards training students to undertake the responsibilities of a physician of first contact who is capable of looking after the preventive, promotive, curative and rehabilitative aspects of medical care.
2. With a wide range of career opportunities available today a graduate has a wide choice of career opportunities. The training, though broad based and flexible, should aim at providing an educational experience of the essentials required for health care in our country.
3. To undertake the responsibilities of various service situations, it is essential to provide adequate placement training tailored to the needs of such services. To avail of opportunities and engage in professional activities the graduate shall endeavour to acquire basic training in different aspects of medical care.
4. The importance of community aspects of health care and of rural health care services is to be emphasized. This aspect of education and training of graduates should be adequately recognised in the prescribed curriculum. Adequate exposure to such experiences should be available throughout in all the three phases of graduate medical education and training. This has to be further intensified by providing exposure to field practice areas and training during the internship period. The aim of the period of rural training during internship is to enable the fresh graduates to function effectively under such settings.

5. The educational experience should emphasize health and community orientation instead of only disease and hospital orientation concepts of modern scientific medical education are to be adequately dealt with.
6. Enough experience must be provided for self learning. The methods and techniques that would ensure this must become a part of the teaching-learning process.
7. The medical graduate of modern scientific medicine shall endeavour to become capable of functioning independently in both urban and rural environment. He/She shall endeavour to master the fundamental aspects of the subjects taught and all common problems of health and disease avoiding unnecessary details of specialization.
8. The importance of social factors in relation to the problem of health and disease should receive proper emphasis throughout the course. To achieve this purpose the educational process should also be community based rather than only hospital based. The importance of population control and family welfare planning should be emphasized throughout the period of training with the importance of health and development duly emphasized.
9. Adequate emphasis is to be placed on cultivating logical and scientific habits of thought, clarity of expression and independence of judgement, ability to collect and analyse information and to correlate the facts.
10. The educational process should be placed in a historical background as an evolving process and not merely as an acquisition of a large number of disjointed facts without a proper perspective. The history of Medicine with reference to the evolution of medical knowledge both in this country and in the rest of the world should form a part of this process.
11. Lectures alone are generally not adequate as a method of training and a means of transferring information and even less effective at skill development and in generating the appropriate attitudes. Every effort should be made to encourage the use of active methods related to demonstration and first hand experience.
    Students shall be encouraged to learn in small groups through peer interactions so as to gain maximal experience through contact with patients and the communities in which the patients live. While the curriculum Objectives often refer to areas of knowledge of science, they are best taught in a setting of clinical relevance with hands on experience for the students to assimilate and make this knowledge a part of their own working skills.
12. The graduate medical education in clinical subjects should be based primarily on teaching in out-patient and emergency departments and within the community including should be suitably planned to provide training to graduates in small groups.
13. Clinics should be organized in small groups of preferably not more than 10 students so that a teacher can give personal attention to each student with a view to improving his skill and competence in handling of patients.
14. Proper records of the work should be maintained which will form a basis for the students internal assessment. They should be available to the inspectors at the time of inspection of the college by the Medical Council of India.

15. Maximal efforts have to be made to encourage integrated teaching between traditional subject areas using a problem based learning approach starting with clinical or community cases and exploring the relevance of various preclinical disciplines in both understanding and resolving a problem. Every attempt must be made to avoid compartmentalization of disciplines so as to achieve both horizontal and vertical integration in different phases.
16. Every attempt is to be made to encourage students to participate in group discussions and seminars to enable them to develop personality, character, expression and other faculties which are necessary for a medical graduate to function either in solo practice or as a team member/leader when he begins his independent career. A discussion group should not have more than 20 students.
17. Faculty members should avail of modern educational technology while teaching the students. To attain this objective Medical Education Units/Departments should be established in all Medical colleges for faculty development and providing learning resource material to teachers.
18. To derive maximum advantage out of this revised curriculum the vacation period of students in one calendar year should not exceed one month during the 4 ½ years Bachelor of Medicine and Bachelor of Surgery (MBBS) Degree Course.

3. COURSE OF STUDY

(1) Every student shall undergo a period of certified study extending over 4 ½ academic years followed by one year of compulsory rotating internship. The First MBBS course shall commence in August of an academic year.

(2) The period of 4 ½ years is divided into three phases as follows:

(a) Phase-I (I MBBS) (One Year) consisting of Preclinical subjects (Human Anatomy, Physiology including Bio-Physics, Bio-Chemistry and introduction to Community Medicine including Humanities). Besides 60 hours for introduction to Community Medicine including Humanities, rest of the time shall be somewhat equally divided between Anatomy and Physiology Plus Bio-chemistry combined (Physiology 2/3 and Bio-Chemistry 1/3).

(b) Phase-II (II MBBS) (1 ½ years) consisting of Para clinical/clinical subjects.

During this phase teaching of Para-clinical subjects shall be done concurrently.

The Para-clinical subjects shall consist of Pathology, Pharmacology, Microbiology, Forensic Medicine including Toxicology and part of Community Medicine.

The clinical subjects shall consist of all those detailed below in Phase III.

Out of the time for Para-clinical teaching approximately equal time shall be allotted to Pathology, Pharmacology, Microbiology and Forensic Medicine and Community Medicine combined. (1/3 Forensic Medicine 2/3 Community Medicine).

(c) Phase-III (III MBBS) (Two years) – Continuation of study of clinical subjects from Phase II.

The clinical subjects to be taught during Phase II and III are Medicine and its allied specialities, Surgery and its allied specialities, Obstetrics and Gynaecology and Community Medicine.

Besides clinical posting the rest of the teaching hours should be divided between didactic lectures, demonstrations, seminars, group discussions etc. in various subjects. The training in Medicine and its allied specialities will include General Medicine, Paediatrics, Tuberculosis and Chest, Skin and Sexually Transmitted Diseases, Psychiatry, Radio-diagnosis, Infectious diseases etc. The training in Surgery and its allied specialities will include General Surgery, Orthopaedic Surgery including Physiotherapy and Rehabilitation, Ophthalmology, Oto-Rhino-Laryngology. Anesthesia, Dentistry, Radio-therapy etc. The Obstetrics & Gynaecology training will include family medicine, family welfare planning etc.

(3) The first year (approximately 240 teaching days) shall be occupied in the Phase I (Pre-clinical) subjects.

No student shall be permitted to join the Phase II (Paraclinical/clinical) group of subjects until he / she has passed in all the Phase I (Pre-clinical) subjects.

After passing pre-clinical subjects, 1 ½ years shall be devoted to para-clinical subjects. Phase II will be devoted to Para-clinical and clinical subjects, along with clinical postings. During clinical phase (Phase III) preclinical and para-clinical teaching shall be integrated into the teaching of clinical subjects wherever relevant.

4. CURRICULUM

The curriculum and the syllabi for the course shall be as specified in these Regulations.

5. MEDIUM OF INSTRUCTION

English shall be the medium of instruction for all the subjects of studies and for examinations.

6. SUBMISSION OF LABORATORY RECORD NOTE BOOKS

At the time of practical/clinical examination each candidate shall submit to the Examiners his/her laboratory note books duly certified by the Head of the Department as a bonafide record of the work done by the candidate.

The practical record shall be evaluated by the concerned Head of the Department (Internal Evaluation) and the practical record marks shall be submitted to the University 15 days prior to the commencement of the theory examinations.

The candidate may be permitted by the examiners to refer to the practical record book during the practical examination in the subject of Biochemistry only. No other materials, handwritten, cyclostyled or printed guides are allowed for reference during the practical examinations.

In respect of failed candidates, the marks awarded for records at previous examinations will be carried over to the next examinations. If a candidate desires, he/she may be permitted to improve his/her performance by submission of fresh records and the students should be informed of the same by suitable display.*

7. WORKING DAYS IN AN ACADEMIC YEAR

Each academic year shall consist of not less than 240 working days.

8. INTERNAL ASSESSMENT**

a) The Internal Assessment Marks for those students who passed the I MBBS examination in August and entering the II MBBS in October, shall be sent at the end of January, June & December for 60 Marks (Theory – 30 Marks; Orals – 10 Marks and Practical – 20 Marks) and the aggregate of final Internal Assessment marks at the end of next January for 80 marks (Theory & Orals – 40 marks; Practical – 20 marks; Assignment – 10 marks & Record – 10 marks).

b) ARREAR BATCH ENTERING II MBBS IN APRIL:

The Internal Assessment Marks for those students who passed the I MBBS examination in February and entering the II MBBS in April, shall be sent at the end of July, December & June for 60 marks (Theory – 30 Marks; Orals – 10 Marks and Practical – 20 Marks) and the aggregate of final Internal Assessment marks at the end of next July for 80 marks (Theory & Orals – 40 marks; Practical – 20 marks; Assignment – 10 marks and Record – 10 marks).

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*XXVII SAB dated 07-07-2004 /**30th SAB dated 28.12.2005 –w.e.f August 2006 Examination onwards

The aggregate of Final Internal Assessment Marks submitted at the end of January/July for 80 marks shall be taken by the University as Internal Assessment Marks & a minimum of 35% marks is mandatory for permitting the candidates to sit for the University examinations.

c) Internal Assessment Marks For Forensic Medicine *

The Internal Assessment for 30 marks (Theory – 15 + Oral - 5 & Practical 10 marks) shall be sent to the University once in six months. The final Internal Assessment including Record & Assignment (Theory & Practical 20 marks; Record & Assignment 10 marks) shall be sent to the University.

d) A failed candidate in any subject should be provided an opportunity to improve his/her internal assessment marks by conducting a minimum of two examinations in theory and practical separately and average be considered for improvement.

e) The internal assessment marks (both in written and practical taken together) should be submitted to the University endorsed by the Head of the institutions fifteen days prior to commencement of the theory examinations.

f) A candidate should obtain a Minimum of 35% of marks in internal assessment in a subject to be permitted to appear for the University examination in that subject** .

9. ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATION

a) No candidate shall be permitted to any one of the parts of MBBS Examinations unless he/she has attended the course in the subject for the prescribed period in an affiliated institution recognised by this University and produces the necessary certificate of study, attendance and progress from the Head of the Institution.
b) A candidate is required to put in minimum 80%* of attendance as per recent MCI Norms in both theory and practical/clinical separately in each subject before admission to the examination.
c) A candidate lacking in the prescribed attendance in any one subject in the first appearance shall be denied admission to the entire examinations.
d) Failed candidates who are not promoted to the next phase of study are required to put in minimum 80% attendance during the extended period of study before appearing for the next examination.
e) Attendance earned by the student should be displayed on the Notice Board of the College at the end of every three months and a copy of the same should be sent to the University and parents of the students concerned.

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*35th SAB dated 20/05/2008 with effect from August 2008 examinations onwards
** XXVII SAB held on 07.07.2004

10. REGULATIONS FOR CONDONATION OF LACK OF ATTENDANCE **:

Condonation of shortage of attendance upto a maximum of 5 % * in the prescribed minimum attendance for admission to an examination vests with the discretionary powers of the Vice-Chancellor. A candidate lacking in attendance should submit an application in the prescribed form and remit the stipulated fee 10 days prior to the commencement of the theory examination. The Head of the Department and Head of the Institution should satisfy themselves on the reasonableness of the candidates request while forwarding the application with their endorsement to the Controller of Examinations who would obtain the Vice-Chancellor's approval for admission to the examination. No application would be considered if it is not forwarded through proper channel.

Condonation for lack of attendance shall be taken up for consideration under the following circumstances:

a) Any illness afflicting the candidate.(The candidate should submit through the Head of the Institution. Medical Certificate from a registered Medical Practitioner soon after he returns to the Institution after treatment). Any candidate going on leave on medical grounds should report to the University as well as to the college immediately within 3 weeks for record.

b) Any unforeseen tragedy in the family. (The parent/guardian should give in writing the reason for the ward's absence to the Head of the Institution).

c) Participation in NCC/NSS and other co-curricular activities representing the institution or University. (The Head of the Institution should instruct the concerned officers in-charge of the student activities in their institution to endorse the leave application).

d) Any other leave the Head of the Institution deems reasonable for condonation.

11. UNIVERSITY EXAMINATIONS

(1) COMMENCEMENT OF EXAMINATIONS* :

(a) August 1st / February 1st.

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* 35TH SAB dated 20/05/2008/ ** with effect from August 2008 examinations onwards.

(b) Theory examinations not to be held on Saturdays and Sundays. If the date of commencement of the examination falls on a public holiday, the next working day will be the date of commencement of examination.

(2) TIMING OF EXAMINATIONS

a) Phase – I: Professional examination : at the end of one academic year.
b) Phase – II: Professional examination : at the end of 1 ½ years from the commencement of Phase II.
c) Phase – III – Part-I examination : at the end of one year of Phase III.
d) Phase – III – Part-II (Final Professional) examination : at the end of 2 years of Phase III.

(3) EXEMPTION IN PASSED SUBJECTS

Candidates who fail in an examination but obtain pass mark in any subject shall be exempted from re-examination in that subject.

(4) CARRY OVER OF FAILED SUBJECTS

(a) Passing in First MBBS Professional examination is compulsory before proceeding to Phase II training.

(b) A student who fails in the II MBBS professional examination shall be permitted to carry the failed subjects to Phase III of the MBBS course but shall not be allowed to appear in III MBBS Professional Part I examination unless he/she passes all the subjects of the II MBBS Professional examination. Passing in II MBBS Professional examination is compulsory before entering Part II of Phase III(final year) of the course.

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* XXVII SAB dated 07.07.2004

© Passing in III MBBS Professional (Part 1) examination is not compulsory before entering for Part II training; however passing of III MBBS Professional (Part I) is compulsory for being eligible to appear for III – MBBS Professional (Part II) examination.

12. REVALUATION OF EXAMINATION ANSWER PAPERS**

There is no provision for revaluation of answer papers. However, retotalling is only allowed in the failed subjects.

13. RE-ADMISSION AFTER BREAK OF STUDY

A separate Regulation book is available for all the Under-graduate and Post-graduate courses of this University, which is covering for the candidates admitted from the academic year 2003-2004 onwards.

14. MIGRATION / TRANSFER OF CANDIDATES:

Migration of Students from one Medical College to another Medical College in India shall be granted only in exceptional cases to the most deserving among the applicants for good sufficient reasons and not on routine grounds. The number of students migrating to/from any one Medical College shall be kept to the minimum which shall in any case not exceed the limit of 5 % of its sanctioned intake in one academic year. There shall be no migration on any ground from one Medical College to another located in the same city.

(2) Migration of students from one college is permissible only if both colleges are recognized by the Central Government under Section 11(2) OF THE Indian Medical Council Act, 1956 and further subject to the condition that it shall not result in increase in the sanctioned intake capacity for the academic year concerned in the respective medical college.

(3) The applicant candidate shall be eligible to apply for migration only after qualifying in the first professional MBBS examination. Migration during clinical course of study shall not be allowed on any ground.

** Deleted 31st SAB dated:29.06.2006

Classification of successful candidates – deleted in 31st S.A.B. dt:29.06.2006.

(4) For the purpose of Migration, an applicant candidate shall first obtain 'No Objection Certificates' from the college where he is studying for the present, the University to which it is affiliated to, the college to which migration is sought and the University to which that college is affiliated to. He shall submit his application for migration within a period of one month of passing (declaration of results) of the first professional MBBS examination along with the said 'No Objection Certificates' to the Director, Medical Education of the State where the College/institutions including Deemed Universities to which migration is sought is situated or to the Head of the Institution in case migration is sought to a Central Government institution. The Director, Medical Education of the State concerned or the Head of the Central Government institution, as the case may be, shall take a final decision in the matter as to whether of not to allow migration in accordance with the provisions of these Regulations and communicate the same to the applicant student within a period of one month from the date of rece3ipt of the request for migration.

(4) A student who has joined another college on migration shall be eligible to appear in the II professional MBBS examination only after attaining the minimum attendance in that college in the subjects, lectures, seminars etc. required for appearing in the examination prescribed under Regulation 12(1)

Note – 1: The State Governments/ Universities / Institutions may frame appropriate guidelines for grant of No Objection Certificate or migration, as the case may be, to the students subject to provisions of these regulations.

Note – 2: Any request for migration not covered under the provisions of these Regulations be referred to the Medical Council of India for consideration on individual merits by the Director (Medical Education) of the State or the Head of Central

Government Institution concerned. The decision taken by the Council on such requests shall be final.

Note - 3: The College /Institutions shall send intimation to the Medical Council of India about the number of students admitted by them on migration within one month of their joining. It shall be open to the Council to undertake verification of the compliance of the provisions of the regulations governing migration by the College at any point of time."

5. In order to streamline the migration of II MBBS students from one Medical college to another Medical college, the University has proposed the following regulations for the Migration of II MBBS students:-

1) Both the Medical Colleges shall be institutions recognized by the Medical Council of India.
2) The applicant shall submit No Objection Certificate from the college where he/she is studying for the present and the transferee Medical College.
3) The candidate should have passed first professional MBBS examination.
4) The application for Migration, complete in all respects, should be submitted to all authorities concerned within a period of one month of passing the first professional MBBS examination.
5) Migration during clinical course of study will not be considered by the University.
6) Issue of N.O.C for all Migration/Transfers are subject to the approval of the Vice-Chancellor.

7) The candidate has to obtain and furnish a letter from the Dean of the transferee Medical college that the number of students migrating to/from the concerned Medical college has not exceeded the limit of 5% of its sanctioned intake in that particular academic year.

8) The candidates are not eligible for mutual transfer from one Medical College to another Medical College. The request for Mutual transfer shall be rejected summarily.

9) The following compassionate grounds shall be considered for the purpose of migration

   a. Death of a supporting guardian.
   b. Illness of the candidate causing disability.
   c. Disturbed conditions declared by Government in the Medical College area.
   d. Any other **EXTRA ORDINARY Reason** at the Discretion of the Governing Council Members of this University.

10) Candidate seeking transfer on personal grounds or without valid reasons will not be entertained.

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CURRICULUM

II MBBS

PATHOLOGY

(I) GOAL

The broad goal of the teaching of undergraduate student in Pathology is to provide the students with a comprehensive knowledge of the mechanism and cause of the disease with corresponding tissue changes in order to achieve complete understanding of the natural history and clinical manifestation and to diagnose with appropriate lab investigations.

(II) OBJECTIVES

(A) Knowledge: At the end of the course, the student shall be able to:

1) Describe the structure of a sick cell, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations.
2) Explain the pathophysiological process, which govern the maintenance of fluid and homeostasis, mechanisms of their disturbance and the morphological and clinical mainfestations associated with it.
3) Describe the mechanisms and patterns of tissue response to injury such that he/she can appreciate the Patho-Physiology of disease process and their clinical manifestations.
4) Correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases, to the extent needed for understanding of disease processes and their clinical significance.

(B) SKILLS

At the end of the course, the student shall be able to

1. Describe the rational and principles of technical procedures of the diagnostic laboratory tests and interpretation of the results:
2. Perform the simple bed side tests on blood, urine and biological fluid samples.
3. Draw a rational scheme of investigations aimed at diagnosing and managing the causes of common disorders.

Understand biochemical/physiological disturbances that occur as a result of disease in collaboration with preclinical departments.

(C) INTEGRATION

At the end of training he/she shall able to integrate causes of diseases, their relationship with different etiological factors (Social, Economic and Environmental) that contribute to the natural history of diseases that are most prevalent in India.

CLINICAL PATHOLOGY LAB-CLASS SCHEDULE – PHASE II

a. Introduction clinical Pathology – Demonstration of sample collection.
b. Total RBC counting – demonstration.
c. Total WBC counting – demonstration.
d. Hemoglobin estimation – demonstration and practical.
e. Packed cell volume Demonstration and discussion.
f. Differential count – demonstration and practical.
g. Peripheral smear study – discussion and practical.
h. Erythrocyte sedimentation rate – demonstration and discussion.
i. Blood indices – discussion.
j. Blood grouping – practical and discussion.
k. Bleeding time and clotting time – discussion.
l. Reticulocyte count – slide discussion.
m. Platelet count – Slide discussion.
n. Osmotic fragility test – Discussion – Demonstration.
o. Coomb's test – discussion.
p. Bone marrow biopsy – procedure and slide discussion
q. Sputum examination – discussion.
r. CSF examination – demonstration of procedure, cell count and discussion.
s. Seminal analysis – slide discussion.
t. Cytology - Vaginal smear, ENAC, (breast) and body fluids.
u. Tissue processing - H&E
v. Special stains - discussion.
w. Bone marrow charts – discussion.
x. Instruments – demonstration and discussion
y. Examination of Urine – demonstration, discussion and practical, (Physical, Chemical and Microscopic.)

II. M.B.B.S. PATHOLOGY PRESCRIBED TEACHING HOURS - 300 hrs.

SYLLABUS

General Pathology & Haematology

(PRACTICAL – BY STUDENTS, DEMONSTRATION – BY FACULTY)

1. BONE MARROW HEMATOLOGY

(a) Theory :

Bone marrow aspiration, Biopsy and cellular details.

(b) **Practical :**

Clinical Pathology Introduction, Collection of Samples.

(c) **Demonstration:**

Demonstration : Bone marrow aspiration and Biopsy Instruments.

2. R.B.C. DISORDERS – ANAEMIAS, CLASSIFICATION AND LABORATORY INVESTIGATIONS

(a) Theory :

Iron deficiency anaemias & Megaloblastic anaemias.
Hemolytic anaemias – Congential and Acquired.

Aplastic anaemias and anaemias of chronic disorders : Polythemia.

(b) Practical :

Perform

Hb

Iron deficiency anemia view the slide & record

Macrocytic anaemia view the slide & record

Megaloblastic marrow view the slide & record

(c) Demonstrations :

P.C.V.
Sickle cells }
Thalassemia }– Peripheral smear
Reticulocytes

3. W.B.C. DISORDERS

(a) Theory:

Leukopenia, agranulocytosis a234nd Leukocytosis

Leukemias & Multiple myeloma

Myeloproliferative disorders

(b) Practicals :

PERFORM:

Differential count and peripheral smear, study (interpretation)

(c) Demonstrations and Discussions:

Neutrophilia
Eosinophilia and } View Slide and Record.
Peripheral Smear

4. **COAGULATION DISORDERS**

(a) Theory :

Laboratory investigations

Vascular disorders

Platelets disorders

Coagulation factors deficiency

(b) Demonstration :

Bleeding time, clotting time.

Enumeration of platelets in Peripheral smear

5. BLOOD GROUP, BLOOD BANKING SYSTEM AND TRANSFUSION REACTIONS

Practical :

PERFORM

Blood group & Rh Factor

Demonstration :

Blood Bank working Pattern

6. LYMPH NODES, SPLEEN, THYMUS

(a) Theory :

Lymph Nodes -

Specific and non-specific lymph adenitis

Lymphomas – Hodgkin's and Non-Hodgkin's

(b) Practical :

Lymphomas - Specimen

Lymphoma – slides – Hodgkin's only

Secondary deposits – slide + specimen.
T.B. Lymphadenitis – specimen + slide.

7. **SPLEEN**

(a) Theory :

Spleenomegaly

(b) Practical :

CVC Spleen - Specimen and slide.

8. **A) CELL INJURY & CELLULAR ADAPTATIONS:**

(a) Theory :

Aetiologic factors and mechanism, hypoxia, oxygen derived radical injury and hypoxia, chemical agents, radiation, immunological mediators, influence agents, genetic factors and apoptosis.

(b) Practical :

Demonstration and discussion

Introduction to Histopathology and cytology, laboratory and museum.

B) REVERSIBLE AND IRREVERSIBLE CELL INJURY

(i) Theory :

Cell injury and intracellular accumulations, Necrosis, Pathological calcifications.

Adaptation to cell injury, Atrophy, hypertrophy, hyperplasia, metaplasia and dysplasia.

(ii) Practicals :

Fatty change – Liver specimen & Slide

9. **INFLAMMATION:**

Definitions :- Patterns of inflammation, acute responses and chronic responses. Humoral and cellular participants of inflammation.

10. Chemical mediators, vascular, cellular and molecular events of inflammation, regulation of inflammation.

(a) Practicals :

Acute appendicitis Specimen and slide
Chronic inflammation : Tuberculous granuloma - Specimen and Slide.

(c) Demonstration :

Abscess – Liver or Lung – Specimen
Foreign body Granuloma - Slide.

11. **Repair and regeneration**

(a) Theory :

Components of repair and regeneration reactions, cells of the repair process. mechanism of repair, Regeneration and healing in specific organs. E.g. Fracture Healing

(b) Practicals:

Granulation tissue- Slide

12. **GENETICS :**

Introduction to Medical genetics
Genetic Disorders, Karyotyping.

13. **HEMOSTASIS**

(a) Theory :

Normal hemostasis, abnormal hemostasis – Vascular defects, platelet defects, defect of coagulation proteins, disseminated intravascular coagulation.

Thrombosis

(b) Practicals :

Venous thrombus specimen, Organisation of thrombus slide.

14. CIRCULATORY DISTURBANCE

(a) Theory :

Edema, hyperemia and congestion, shock, embolism, infarction and gangrene

(b) Practicals :

Filarial leg – Specimen, CVC – Liver, Lung, Spleen – specimen and slide.

Infarction – Spleen, Heart, Kidney- Specimen and slide.

Gangrene Intestine + Foot – Specimen.

15. NEOPLASIA :

(a) Theory :

Definition & Tumour Nomenclatures. Characteristics of Neoplastic Cells.
Etiology of Neoplasia. Demographic and Familiar aspects of cancers – Spread of tumours.
Laboratory Diagnosis.

(b) Practicals:

Benign – Lipoma, Leiomyoma, capillary and cavernous angioma schwannoma. Cystic Teratoma – Ovary, Squamous papilloma, Adenomatous polyp- Intestine, Chondroma : Slides and Specimens.

Malignant – Squamous Cell carcinoma, Osteosarcoma, Malignant Melanoma – All specimens and slides. Metastic Deposits – Lymphnode, Lung, Liver, Cytology – Malignant Cells in cervical smear, FNAC - Breast & Body fluids.

16. IMMUNO PATHOLOGY :

(a) Theory :

Immune responses, Atopic and Anaphylactic reactions, Cytotoxic reaction, immune complex reactions, delayed hypersensitivity granulomatous reactions.
Autoimmunity and Autoimmune diseases. Primary Immuno deficiencies, Acquired Immunodeficiency Syndrome, Amyloidosis, & Transplant.

(b) Practicals :

Amyloid – Liver, Spleen, Kidney Specimens.

17. **INFECTIOUS DISEASES:**

(a) Introduction :

Bacterial Diseases – Gram Positive & Gram negative infections, Typhoid, Tuberculosis, Leprosy, Syphilis, Fungal Diseases, Protozoal Diseases – Amoeba, Malaria.

(b) Practical :

Actinomycosis. Maduramycosis Specimens and slides.

Tuberculous lymphadenitis Tuberculosis – Lung Leprosy – Lerpromatous & Tuberculoid. Amoebic abscess (LIVER),Liver and tuberculosis ulcer intestine, Malarial – Spleen. Specimens.

18. **ENVIRONMENTAL AND NUTRITIONAL PATHOLOGY :**

(a) Theory:

Tobacco, Alcohol, Drug Abuse, Radiation injury and Nutritional deficiencies.

19. **CHILHOOD DISEASES:**

Neonatal Respiratory Distress Syndrome and Tumors: For e.g., Neruroblastona, Retinoblastona.

SYSTEMIC PATHOLOGY

20. **VASCULAR SYSTEM :**

(a) Theory :

Artheroscelerosis, Aneurysms, Vasculitis, & Tumors.

(b) Practicals :

Atherosclerosis – Aorta – Specimen and slide. Aortic Aneurysms – Syphilitic and Atherosclerotic – Specimen.

21. PATHOLOGY OF HEART :

(a) Theory :

Rheumatic Heart Disease, Infective and Non-infective endocarditis, Myocardial Infarction, Hypertensive Heart Disease, Pericarditis, Congenital Heart Disease – Specimens.

(b) Practicals:

Rheumatic mitral stenosis, Infective endocarditis, Myocardial Infarction, Hypertensive Cardiac Hypertrophy – Specimens.

(c) Demonstration :

Left Atrial myxoma specimen, Aschoff Nodule – Slide.

22. PATHOLOGY OF LUNG:

(a) Theory :

Pulmonary Odema

Emphysema - COPD

Bronchial Asthma, Pneumonia – Bronchial & Lobar, Interstitial Pulmonary Tuberculosis, Brochiectasis and lung abscess, Pneumoconiosis, Tumours of Lungs and Pleura.

(b) Practicals:

Lobar pneumonia – Red & Grey hepatization, Bronchiectasis – Lung abscess, pulmonary tuberculosis, Emphysema – specimen & slide, Bronchogenic carcinoma, Secondary deposit lung – specimen.

23. PATHOLOGY OF GASTRO INTESTINAL TRACT

(a) Theory :

Buccal /Oral carcinoma, Pleomorphic Adenoma of salivary gland, Carcinoma esophagus, peptic ulcer, polyps, and gastric carcinoma. Idiopathic inflammatory bowel diseases, ulcers of small and large intestines, colorectal polyps and carcinomas.

(b) Practicals :

Pleomorphic adenoma – salivary gland specimen & slide, carcinoma – oesophagus – specimen. Gastric ulcer and carcinoma – specimen & slide Ulcers of the small intestineTyphoid, Tuberculosis intestine, amoebic ulcer, carcinoma large intestines.

24. **LIVER BILIARY TRACTS AND PANCREAS**

(a) Theory :

Hepatitis, Cirrhosis, Tumours of liver, Alocholic liver disease.
Cholecystitis, Gall stone, Tumour of gall bladder, Pancreatitis and Tumours of Pancreas.

(b) Practicals :

Cirrhosis – liver specimen with slides
Hepatoma – specimen with slides
Gall stone – specimen
Liver Metastatis – specimen

25. **(1) KIDNEY :**

(a) Theory :

Cystic lesions, Acute & Chronic Renal Failure, Glomerulonephritis, Pyelonephritis and Urolithiasis.

Nephrotic Syndrome, Diabetic, Kidney and tumours, Urinary bladder – infections, stones and tumours.

(b) Practicals :

Chronic glomerulonephritis – end stage renal disease.

Chronic Pyelonephritis – specimen and slide.

Renal cell carcinoma specimen and slides

Wilm’s tumour – Slide + Specimen.

26. GENITAL SYSTEM MALE

(a) Theory :

Carcinoma penis and premalignant lesions, tumours of the testis. Prostate – benign hypertrophy and tumours.

(b) Practicals :

Carcinoma penis – specimen and slides
Seminoma specimen

(c) Demonstration :

Seminoma – Slide

BHP – specimen + slides.

27. GENITAL SYSTEM – FEMALE

(a) Introduction :

Carcinoma – cervix & Premalignant lesion

Endometrial Hyperplasias - Carcinomas

Endometriosis

Adenomyosis, Leiomyomas - Uterus

Ovarian tumours

Gestational Trophoblastic diseases.

(b) Practicals :

Carcinoma – Cervix specimen, fibroid uterus slides + slides

Endometrium proliferative / slide

Endometrium secretory / slide

Benign cystic teratomas – specimen + slide

(c) Demonstrations:

Serous cystadenoma – specimen & slide

Musinous cystadenoma specimen & slide

28. **BREAST**

(a) Theory :

Tumours of the breast, Fibrocystic Disease

(b) Practical :

Fibroadenoma breast, specimen & slide

Infiltrating ductual carcinoma specimen & slide and FNAC

29. **ENDOCRINE**

(a) Theory :

Hypo and Hyperthyroidism

Thyroid / thyroiditis, goitre and tumours of thyroid

Parathyroid
Pituitary
Adrenal
— Hypo and Hyper function Tumours

Diabetes Mellitus

(b) Practicals:

Colloid goitre specimen / slide

Toxic goitre – slide

Papillary carcinoma specimen / slide

30. **SKIN**

(a) Thoery :

Premalignant lesions and tumours.

(b) Practicals:

Basal cell carcinoma specimens and slides

Squamous cell carcinoma specimens and slides

Malignant melanoma specimens and slides.

31. **MUSCULO SKELETAL SYSTEM + JOINTS**

(a) Theory :

Osteomyelitis, bone tumours.

Rheumatoid and Osteo arthritis.

(b) Practicals :

Osteo sarcoma, giant cell tumour, and Ewings sarcoma – Specimens and slides.

32. **CENTRAL NERVOUS SYSTEM**

(a) Introduction :

Infections and tumours.

The student's activity includes frequent symposia, group discussion, internal assessment test, model practical, viva. C.P.C. discussion modules with association of corresponding clinical faculty.

Post mortem demonstration – 10 can be integrated with forensic department.
5 separated Clinical autopsies discussed and recorded in Pathology Record.

EVALUATION

INTERNAL ASSESSMENT : **80 Marks ***

Theory	**:**	**40 Marks**
Practical	**:**	**20 Marks**
Record	**:**	**10 Marks** ┐
Assignment	**:**	**10 Marks** ┘****

(Any one of the following is compulsory) @
a) Symposium/Seminar
b) Short project work
c) Problem based learning
d) Quiz on prescribed topics

Total	:	80 Marks

UNIVERSITY EXAMINATION PATTERN

THEORY

TWO PAPERS OF 3 HOURS DURATION - 100 MARKS EACH

PAPER-I - General Pathology & Hematology – 100 marks

PAPER- II - Systematic Pathology – 100 marks

PATTERN OF QUESTION PAPER ***:

	Marks	Time/Minutes
10 Short Answers Questions (10 x 2)	= 20 marks **}**	
2 Essays (2 x 15)	= 30 marks }	3.00 hours
10 short notes (10 x 5)	= 50 marks }	
Maximum	100 marks	

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*XXVII SAB dated 7.7.2004/ ** XXIX SAB dated 5.8.2005 – from August 2005 onwards
@ XXVIII SAB dated 22.12.2004 from August 2005 onwards
*** MCQ's withdrawn from August 2008 onwards – 35th SAB held on 20.5.2008

PRACTICAL EXAMINATION : 80 Marks

Practical-I - 40 Marks		**Practical-II - 40 Marks**	
Spotters (7+2+1) (Slides+Specimen+)	10	Urine (physical & Chemical examination)	20
DC/PS Study	20	Special HP Slides (2 slides)	10
Hb/Blood grouping	10	Cytology slide (FNA or PAP + Haematology)	10 (5 + 5)
Total :	40	Total :	40

Practical Examination :

A maximum of 20 candidates / day of practical exam is desirable.

VIVA: 40 MARKS

1. General Pathology	10 marks
2. Hematology and Lymph reticular system	10 marks
3. C.V.S. RS G.I.T; & Liver	10 marks
4. G.U.T. Bone, Muscle, Skin, Endocrine, Breast & C.N.S.	10 marks
Total	40 marks

Marks qualifying for a pass :

50% in Theory	:	100 / 200
50% in Theory including Viva	:	120 / 240
50% in Practical	:	40 / 80
35% in Internal Assessment	:	28 / 80
Total 50% aggregate	:	200 / 400

II. M.B.B.S. MICROBIOLOGY PRESCRIBED TEACHING HOURS - 250 Hrs.

GOAL :

The broad goal of the teaching of undergraduate students in Microbiology is to provide an understanding of the natural history of infectious diseases in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment, control and prevention of infections in the community, immune system in health and disease.

OBJECTIVES :

A) Knowledge

At the end of the course, the student will be able to :

1) State the normal flora of the human body and describe the host parasite relationship.
2) List the pathogenic microorganisms (bacteria, viruses, parasites, fungi and describe the Pathogenesis of the disease produced by them.
3) State or indicate the modes of transmission of pathogenic and opportunistic Organisms and their sources including insect vectors responsible for transmission of infection.
4) Acquire basic knowledge of normal immune system, abnormalities, identification of conditions of immunological importance.
5) Describe the mechanisms of immunity to infections.
6) Acquire knowledge on suitable antimicrobial agents for treatment of infections and scope of immune – therapy and different vaccines available for prevention of communicable diseases.
7) Apply methods of disinfection and sterilization to control and prevent hospital and community acquired infections.
8) Recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.
9) To acquire knowledge of safe handling and disposal of infectious waste.
10) Acquire basic knowledge of laboratory diagnosis, treatment, control and prevention of infections.
11) Acquire basic knowledge of microbial physiology and genetics.
12) Investigation of outbreaks including collection of samples.

B) SKILLS:

At the end of course, the student will be able to

1) operate and use the light compound microscope.

2) to employ aseptic and sterile precautions while performing simple invasive procedures such as venepuncture etc.

3) collect and transport appropriate clinical materials with necessary precautions for the laboratory diagnosis of infectious diseases.

4) to perform common laboratory techniques (as given below) for the direct demonstration of microorganisms from clinical materials and interpret their findings. These should include :-

(a) Saline and iodine preparations and concentration methods for demonstration of trophozoites, Ova or cysts in stool samples.

(b) Prepare and stain peripheral blood for screening malarial parasites and microfilariae.

© Prepare a smear and perform Gram stain on body fluids, urine and pus specimens.

(d) Prepare a smear and perform Ziehl – Neelsen stain for demonstration of mycobacteria especially from sputum.

- Interpret results of microbiological tests including antimicrobial testing for the diagnosis of common infectious diseases.
- Report and interpretation of serological tests for diagnosis of infectious diseases

C) INTEGRATION:

The student will be integrated with the knowledge of Microorganisms and their pathogenicity, host response, laboratory diagnosis and epidemiology, control of diseases in the community by proper immunization procedures.

SYLLABUS

General Microbiology, Immunology and Systemic Bacteriology

1. GENERAL MICROBIOLOGY

History and mile stone in microbiology

Scope of Medical Microbiology

Microscopy

Staining of bacteria

Bacterial morphology and classification

Nutrition and growth of bacteria

Culture media and cultivation of bacteria.

Identification of bacteria (and bacterial classification).
Bacterial genetics

Sterilisation & Disinfection

Antimicrobials and Chemotherapy & Antimicrobial Sensitivity Testing.

Normal Microbial flora

Microbial pathogenicity and immunity

II. IMMUNOLOGY

Host response (immunity)

Structures and functions of Immune system

Cells of immune system

Immune response/immunity

Antigen

Antibody

The complement system

Antigen antibody reactions

Molecular techniques in diagnostic microbiology

Hypersensitivity

Auto immunity

Histo compatibility complex

Transplantation immunity

Tumour immunity

Immuno deficiency diseases

Immuno hematology

Immunoprophylaxis against infectious diseases

III. SYSTEMATIC BACTERIOLOGY

Staphylococcus

Streptococcus

Neisseriac

Corynebacteria

Bacillus

Clostridium

Nonsporing anaerobes

Mycobacteria

Actinomycetes and Nocardia

Coliform Bacteria – Escherichia coli & Klebsiella

Proteus

Salmonella

Shigella

Yersinia

Pasteurella & Francisella

Hoemophilus

Bordetella

Brucella

Vibrio Cholerae

Helicobacter, Aeromonas, Pleisiomonas

Pseudomonas and other non-fermenters

Spirochaetes

Rickettsiae

Chlamydia

Mycoplasma

Miscellaneous bacteria

Virology, Mycology, Parasitology and Applied Microbiology

I. PARASITOLOGY

Introduction

Classification

General Principles of diagnosing parasitic infections and treatment of parasitic infections.

Protozoology

Rhizopoda- Pathogenic and non – pathogenic amoebae

Mastigophora – Intestinal, blood and tissue Mastigophora

Sporozoa – Plasmodium, Toxoplasma, Isospora

Ciliate – Balantidium coli

Opportunistic Protozoan parasites.

- Helminthology – Platyhelminths – Cestodes and Trematodes
- Nemathelminths –Nematodes
- Medically important insect vectors and ectoparasites

VIROLOGY

A. GENERAL VIROLOGY

- Morphology of viruses
- Replication of viruses
- Cultivation of viruses
- Classification of viruses
- Assay of viruses
- Identification of viruses and Lab diagnosis
- Genetics of viruses
- Pathogenesis and Host response to viral infections
- Antiviral agents
- Bacteriophage

B. SYSTEMIC VIROLOGY
DNA VIRUSES

- Pox viruses
- Adeno
- Herpes
- Papova
- Parvo

RNA VIRUSES

- Picorna
- Orthomyxo
- Paramyxo

- Rota Viruses
- Rhabdo Viruses
- Hepatitis Viruses
- Arbo viruses
- Retro Viruses
- Slow Viruses / Prion
- Oncogenic Viruses
- Miscellaneous viruses
- Recent Advances – SARS, BIRD FLU

GENERAL MYCOLOGY

Economic importance and harmful effects of fungi – Mycotoxins

Classifications of fungi

Pathogenesis and Lab diagnosis of mycotic infections.

SYSTEMATIC MYCOLOGY

Superficial mycosis

Cutaneous mycoses

Sub cutaneous mycoses

Systemic mycoses

Opportunistic mycosis and common lab contaminants

Antifungal agents

APPLIED CLINICAL MICROBIOLOGY

Collection, transport and storage, disposal of specimens

Organ specific infections
Central nervous system infections

Respiratory infections – Upper / Lower

Urinary tract infections

Gastro intestinal infections – acute / chronic including food poisoning

Infections of bones and joints, & Dental Infections

Genital tract infections and congenital infections

Infections of the Eye, ear and skin

Infection of CVS

Systemic infections / Syndromes – PUO, Septicemias

Zoonotic infections

Environmental sanitation tests (food, water, milk and air)

Hospital infections (Prevention and control)

Basic molecular biology in relation to diagnosis of infectious diseases.

- Investigations of outbreak - As Community health officer - PHC level.
- Operation theatre sterility
- Hospital waste management
- Emerging & Re-emerging infections.

PRACTICALS

Staining – Smear preparation Grams stain

Special Stains – Acid fast staining, Ponders, and Capsule (Demon only) staining.

Demonstration of Hanging drop

Demonstration of culture media / methods

Demonstration of sterilization techniques

Applied Exercises

Systematic – Identification of the pathogen from the given clinical material based on Staining property, cultural characters, biochemical and serological tests.

Immunology – Interpretation of the given Immunological test, Agglutination – Slide, tube and Passive agglutination (Latex etc.)

Precipitation – VDRL
Gel diffusion

ELISA

Mycology – Identification of the given fungus by cultural morphology and wet mount preparation / staining.

Virology – ELISA

Haemagglutination and Haemagglutination inhibition

Parasitology – Stool examination for ova and cyst, Saline and iodine preparation, Direct and concentration techniques.

Blood smear for malarial parasite, Microfilaria and other parasite.

Identification and interpretation of the parasites (Adult and larval forms).

Demonstration of unconventional parasites by special staining methods.

EVALUATION

INTERNAL ASSESSMENT : **80 Marks ***

Theory	**:**	**40 Marks**
Practical	**:**	**20 Marks**
Record	**:**	**10 Marks** ┐
Assignment	**:**	**10 Marks** ┘ ****

(Any one of the following is compulsory) @
a) Symposium/Seminar
b) Short project work
c) Problem based learning
d) Quiz on prescribed topics

Total	:	80 Marks

UNIVERSITY EXAMINATION PATTERN

THEORY

Two papers of 3 hours duration - 100 marks each.

Paper I – General Microbiology, Immunology & Systematic Bacteriology – 100marks

Paper II – Virology, Mycology, Parasitology & applied Microbiology – 100 marks

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*XXVII SAB dated 7.7.2004/ ** XXIX SAB dated 5.8.2005 – from August 2005 onwards
@ XXVIII SAB dated 22.12.2004 from August 2005 onwards

PATTERN OF QUESTION PAPER * :

		Marks	Time/Minutes
10 Short Answer Questions	(10 x 2)	20	
2 Essay questions	(2x15)	30	(3 hrs.)
10 Short Notes	(10x5)	50	
	Total :	100	(3 hrs)

Practical Examination : **80 marks**

Gram Staining (Pus/Urine/CSF)	20 marks
Sputum for AFB	20 marks
Parasitology (Stool)	20 marks
Spotters (10x2)** (2 Marks per spotter i.e. one mark for identification and one mark for two salient features about the spotter)	20 marks
Total :	80 marks

Practical Examination :

Maximum of 20 candidates / day of practical is desirable.

Viva : **40 marks**

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* MCQ's withdrawn from August 2008 onwards – 35th SAB held on 20.5.2008
** 31st SAB dated 29.6.2006

Marks qualifying for Pass :

50% in Theory	:	100 / 200
50% in Theory including Viva	:	120 / 240
50% in Practical	:	40 / 80
35% in internal assessment	:	28 / 80
Total 50% aggregate	:	200 / 400

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II M.B.B.S.
PHARMACOLOGY
PRESCRIBED TEACHING HOURS : 300 Hrs.

GOAL:

The broad goal of the teaching of undergraduate students in Pharmacology is to inculcate a rational and scientific basis of therapeutics.

OBJECTIVES :

A) KNOWLEDGE :

At the end of the course, the student shall be able to:

(1) Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs:

(2) List of indications, contraindications, interactions, and adverse reactions of commonly used drugs:

(3) Indicate the use of appropriate drug in a particular disease with consideration to its cost efficacy and safety for

(4) Individual needs

(5) Mass therapy under national health programmes.

(6) Describe the pharmacokinetic basis, clinical presentations., diagnosis and management of common poisonings.

(7) List the drugs of addiction and recommend the management.

(8) Classify environmental and occupational pollutants and state the management issues.

(9) Indicate causation in prescription of drugs in special medical situations such as pregnancy, lactation, infancy and old age.

(10) Integrate the concept of rational drug therapy in clinical pharmacology.

(11) State the principles underlying the concept of “Essential Drugs”.

(12) Evaluate the ethics and modalities in the development and introduction of new drugs.

B) SKILLS :

At the end of the course, the student shall be able to :

(1) Prescribe drug for common ailments.

(2) Recognize adverse reactions and interactions of commonly used drugs.

(3) Observe experiments designed for study of effects of drugs, bio-assay and interpretation of the experimental data.

(4) Scan information on common pharmaceutical preparations and critically evaluate drug formulations.

C) INTEGRATION :

Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments and pre-clinical departments.

PHARMACOLOGY SYLLABUS

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1. GENERAL PRINCIPLES

a) Pharmacokinetics
b) Pharmacodynamics
c) Principles of therapeutics
d) Concepts of essential drugs and rational drug therapy
e) Special aspects of drugs in pregnancy, perinatal pediatric and geriatric pharmacology.
f) Ethics and modalities of new drug developments
g) Adverse reactions to drugs and common drug interactions.
h) Gene therapy.

2. DRUGS ACTING AT SYNAPTIC AND NEURO EFFECTOR JUNCTION

a) Cholinergic and anticholinergic drugs
b) Adrenergic and adrenergic blockers
c) Drugs acting at Neuromuscular Junction and autonomic ganglia.

3. OCULAR PHARMACOLOGY

4. DRUGS ACTING ON CENTRAL NERVOUS SYSTEM

a) General anesthetics
b) Local anesthetics

c) Hypno sedatives
d) Drugs and treatment of psychiatric disorders – psychosis, depression and mania
e) Drugs in the therapy of epilepsies
f) Drugs in the therapy of migraine
g) Drugs in central nervous system degenerative disorders
h) Opioid analgesics and antagonists
i) Drug addiction and treatment.

5. AUTACOIDS

a) Histamine, Bradykinin, 5 HT and their antagonists
b) Lipid derived autacoids
c) Analgesic – antipyretic and anti inflammatory agents.

6. DIURETICS AND OTHER AGENTS AFFECTING RENAL CONSERVATION OF WATER

7. DRUGS ACTING ON CARDIOVASCULAR SYSTEM INCLUDING BLOOD

a) Drugs used for treatment of Myocardial ischemia, heart failure
b) Anti arrhythmic drugs
c) Anti hypertensives
d) Lipid lowering drugs
e) Drug Therapy of shock
f) Haemopoietic agents (growth factors, minerals and vitamins)
g) Anticoagulants, Thrombolytic and antiplatelet drugs

8. DRUGS ACTING ON RESPIRATORY SYSTEM

a) Pharmacotherapy of cough
b) Pharmacotherapy of bronchial asthma

9. THERAPEUTIC GASES

10. DRUGS AFFECTING GASTROINTESTINAL FUNCTION

11. CHEMOTHERAPY

a) Chemotherapy of microbial diseases
b) Chemotherapy of parasitic infections
c) Chemotherapy of neoplastic diseases
d) Antiseptics and disinfectants

12. DERMATOLOGICAL PHARMACOLOGY

13. DRUGS USED FOR IMMUNOMODULATION

14. ENDOCRINE PHARMACOLOGY

a) Hypothalamic and pituitary hormones
b) Thyroid and antithyroid drugs
c) Adreno corticostreorids and their antagonists
d) Gonadal hormones and inhibitors
e) Pancreatic hormones, and antidiabetic drugs
f) Agents that effect bone mineral homeostasis

15. ENZYMES IN THERAPY

16. VITAMINS

17. TOXICOLOGY

a) Principles of toxicology and treatment of poisoning.
b) Heavy metals and antagonists
c) Non metallic environmental toxicants.

SYLLABUS IN PRACTICAL PHARMACOLOGY

a) Prescription writing for common ailments
b) Prescription audit
c) Patient Oriented Problems relating to common adverse drug reaction and drug interactions.
d) Observation of experiments designed for study of effects of drugs.
e) Critical evaluation of drug formulations
f) Dosage calculations
g) Pharmaco economic problems
h) Interpretation of clinical pharmacology data
i) Knowledge of basic principles of Pharmacy and drug delivery systems

PHARMACOLOGY PRACTICAL EXAMINATION DESIGN

PRACTICAL : 80 Marks

A)	PRACTICAL - I – 90 MINUTES	Marks
1.	Prescription writing	10
2.	Prescription audit/critical evaluation of drug formulation	10
3.	Clinical problem solving exercises (Therapy oriented problems of adverse reaction and interaction of commonly used drugs)	10
4.	Dosage calculation including Pharmaco-economics	10
		---- 40 Marks

PRACTICAL - II – 90 MINUTES

1.	Objective Structural Practical Exercise (OSPE) Designed to test the knowledge in Selection, administration and effects of drugs/Observation of Experiments designed for study of effects of drugs in animals.	20
2.	Qualitative/Quantitative experimental pharmacology charts	10
3.	Interpretation of Clinical pharmacology problems/data	10
		----- 40 Marks
	Total Marks	---------- 80 Marks ----------

OSPE Examples

a. To demonstrate how to give an IV injection.
b. To prepare for administration of a test dose of penicillin
c. To demonstrate an inhaler's use.
d. To demonstrate instillation of drops - eye, nose, ear etc.
e. To interpret experimental observations and results.

Maximum of 20 candidates / day of practical is desirable.

ORAL (VIVA) EXAMINATION : 40 Marks.

Examiner 1:- 10 Marks

Topics :

General Principles.

Neuro effector junction and drugs action at synaptic.

Ocular Pharmacology.

Drugs acting on Central Nervous System.

Examiner 2:- 10 Marks

Topics :

1. Autacoids
2. Diuretics and other agents affecting renal Conservation of water
3. Drugs acting on cardio - Vascular system including blood.
4. Drugs acting on respiratory system
5. Therapeutic gases
6. Drugs affecting gastrointestinal function

Examiner 3:- 10 Marks

Topics :

1. Chemotherapy
2. Dermatological pharmacology
3. Drugs used for immunomodulation

Examiner 4:- 10 Marks

Topics :

1. Endocrine Pharmacology
2. Enzymes in therapy
3. Vitamins
4. Toxicology

TOTAL = 40 Marks

EVALUATION

INTERNAL ASSESSMENT : **80 Marks ***

Theory	**:**	**40 Marks**
Practical	**:**	**20 Marks**
Record	**:**	**10 Marks** ┐
Assignment	**:**	**10 Marks** ┘ ****

(Any one of the following is compulsory) @
a) Symposium/Seminar
b) Short project work
c) Problem based learning
d) Quiz on prescribed topics

Total	:	80 Marks

UNIVERSITY EXAMINATION PATTERN

UNIVERSITY EXAMINATION PATTERN :

Two papers of 3 (three) hours duration - 100 marks each.

Paper – I : Pharmacology I 100 Marks

Paper – II : Pharmacology II 100 Marks

Note :
No segregation of syllabus for each paper. Both papers to be set by the same examiner to avoid repetition of questions.

PATTERN OF QUESTION PAPER ***:

		Marks	Time/Minutes
10 Short Answer Questions	(10x2)	20	}
2 Essay questions	(2x15)	30	} (3 hrs)
10 Short Notes	(10x5)	50	}
	Total :	100	

*XXVII SAB dated 7.7.2004/ ** XXIX SAB dated 5.8.2005 – from August 2005 onwards
@ XXVIII SAB dated 22.12.2004 from August 2005 onwards
*** MCQ's withdrawn from August 2008 onwards – 35th SAB held on 20.5.2008

PRACTICAL EXAMINATION : 80 Marks.

VIVA (Oral) : 40 Marks.

Marks qualifying for a pass :

50% in Theory	:	100 / 200
50% in Theory including Viva	:	120 / 240
50% in Practical	:	40 / 80
35% in Internal Assessment	:	28 / 80
Total 50% aggregate	:	200 / 400

FORENSIC MEDICINE PRESCRIBED TEACHING HOURS – 100 Hrs.
(INCLUDING MEDICAL JURISPRUDENCE AND TOXICOLOGY)

GOAL :

The goal of teaching Forensic Medicine to undergraduate student is to impart knowledge of legal procedures involved in practice of medical profession and to apply the knowledge of medical science for the purpose of executing justice in courts of law. Further the teaching will help the students to know of medical ethics and etiquette to be followed during the practice of medicine.

OBJECTIVES :

(A) KNOWLEDGE

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

appear in a court of law as a Registered Medical Practioner and give evidence in cases of Homicide, Assault, Sexual offences, Alcoholic intoxication, Drug dependence and other cases requiring medical opinion.

Practice medicine in the society following medical ethics and etiquette as prescribed by the Indian Medical Council.

(B) SKILL

1) To conduct autopsy on medico-legal cases and issue postmortem certificate. To examine cases of wound (Assault, Homicide etc.,) at the hospital and issue required medico-legal certificate (wound certificate)

2) To treat cases of poisoning and issue certificate to court and police.

(C) INTEGRATION

The student will be able to integrate and apply knowledge of Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Medicine, Surgery and Obstetrics & Gynaecology for the purpose of legal procedures and execution of justice.

SYLLABUS

FORENSIC MEDICINE-INCLUDING MEDICAL JURISPRUDENCE AND TOXICOLOGY

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1. IDENTIFICATION

Definition and data to establish identity-race, religion, sex, age, stature, complexion and features, external peculiarities, anthroprometry, dactylography, and poroscopy-superimposition technique-Forensic odontology-Medico-legal importance of age and sex.

2. THANATOLOGY (DEATH)

Types of death-modes of death and their patho-physiology-causes of death, classification and medico-legal aspects of natural death

3. POST MORTEM CHANGES

Signs of death and changes following death and their medico-legal importance-Adipocere, mimmification, embalming-Estimation of post mortem interval (time of death)-Presumption of death and survivorship.

4. VIOLENT ASPHYXIAL DEATHS

Classification-Hanging, Strangulation by ligature Throttling, Smothering, Gagging, Overlaying, Burking, Choking, Drowning and Sexual asphyxia

5. DEATH DUE TO COLD, HEAT, ELECTRICITY AND RADIATION.

6. ANAESTHETIC AND OPERATIVE DEATHS.

7. MECHANICAL INJURIES (WOUNDS).

Classification and mechanism of wound production - Abrasions, Contusions, Incised wounds, Chop wounds, Stab wounds and Lacerated wounds and their medico-legal Importance, Firearms classification and cartridges.

Firearm wounds by different firearms and their medico-legal importance – Bomb explosion Wounds.

Regional injuries on the body and medico-legal importance.

Medico- legal aspects of wounds – Issue of medico – legal certificates for legal purposes.

Homicide & types of homicide.

Simple and Grievous injuries – causes of death from wounds

8. IMPOTENCE AND STERILITY

Definition, causes, and medico-legal importance.

Sterilization and Artificial insemination and their medico-legal importance.

9. VIRGINITY, PREGNANCY AND DELIVERY

Definition, diagnosis and medico-legal importance, Pseudocyesis, Super fecundation, Superfaelation Legitimacy and Paternity and their medico-legal importance.

10. SEXUAL OFFENCES

Classification- Rape – definition, examination of victim and the accused – Incest, Unnatural sexual offences, types and their medico-legal importance. Sexual Perversion – types and their medico-legal importance – Indecent assault.

Examination of seminal fluid.

11. ABORTION

Definition, classification, methods of procuring abortion, diagnosis and evidences of abortion, medico-legal questions arising in suspected cases of abortion. Medical Termination of Pregnancy Act.

12. INFANTICIDE

Definition, still birth, dead birth and live birth signs of live birth and autopsy in suspected case of infanticide

Causes of death and medico-legal importance. Abandoning of infants, concealment of birth, Battered baby syndrome, Cot death.

13. EXAMINATION OF BLOOD STAINS AND HAIR AND SUSPECTED BIOLOGICAL AND FIBRES STAINS.

14. ORGANISATION OF FORENSIC SCIENCE LABORATORY

Locard's principle; Lie detection, Narcoanalysis, Hypnosis.

15. FORENSIC PSYCHIATRY

Delusion, Hallucination, Illusion, Impulse, Obsession, Delirium, Lucid interval Classification of unsoundness of mind and medico – legal aspects. Restraint of the insane.

16. MEDICO-LEGAL AUTOPSY

Protocol, Technique, Postmortem report.

Examination of set of bones.

Exhumation.

17. TOXICOLOGY

General consideration-Law on poisons, classification of poisons. Diagnosis of poisoning in the live and dead. Duties of the medical practitioner in suspected case of poisoning. General principles of treatment of poisoning

Corrosive poisons, Non-metallic poisons, Insecticides and weed killers, Metallic poison, Organic irritant poison, someferous poisons, Inebriants, Deliriants, spinal poisons, food poisoning, cardiac poisons, Aspyxiants, war gases Curare, Conium. Drug dependence and Addiction.

18. MEDICAL JURISPRUDENCE

Legal Procedure – Inquests, subpoena, Conduct money, Procedure of Criminal trial, Record of evidence, types of evidence, Medical evidence, types of witness.

19. MEDICAL LAW AND ETHICS

Laws governing medical profession :-

Indian Medical Council and State Medical Council organisations, functions, and powers – Rights and privileges of Registered Medical Practitioner. Infamous Conduct. Professional negligence (malpractice)

20. DUTIES OF MEDICAL PRACTITIONER

Doctrine of Reipsa Loquitor, Contributory negligence, vicarious responsibility consent, Euthanasia.

EVALUATION

INTERNAL ASSESSMENT : 30 Marks.

	Marks
Theory & Practical :	20
Record & Assignment*:	10
Total :	30 Marks

UNIVERSITY EXAMINATION PATTERN

THEORY :

One paper of 3 hours duration and 100 marks.

PATTERN OF QUESTION PAPER:*

	Marks	Time/Minutes
10 Short Answer Questions (10x2)	20	
2 Essay questions (2x15)	30	(3 Hours)
10 Short Notes (10x5)	50	
Total	100 marks	3 hours.

* MCQ's withdrawn from August 2008 onwards – 35th SAB held on 20.5.2008

PRACTICAL – I : 15 Marks

1) Age estimation by Dental examination.
2) Age estimation by Radiological examination.
3) Examination of a case of drunkenness & issue of drunkenness certificate.
4) Examination of given cluster of Bones & issue of Medico legal certificate.

PRACTICAL - II : 35 Marks

1) Fetal Examination & opinion
or
Postmortem certificate & opinion - 5 marks

2) Accident Register copy - 5 marks

3) Viscera packing - 5 marks

4) Opinion on Sexual offences - 5 marks

5) Photograph & opinion - 5 marks
(hanging, injuries, drowning & other Related Forensic Medicine Subject).

6) Spotters

a) Pathology specimen
b) Forensic specimen
c) Instruments / Weapons - 10 marks
d) Toxicology seed / Chemical Poison
e) Toxicology plant

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35 marks

TOTAL (PRACTIAL – I + PRACTICAL – II) = 50 Marks.

VIVA : 20 Marks

Marks Qualifying for a Pass:

50% in Theory	:	50 / 100
50% in Theory & Viva	:	60 / 120
50% in Practical	:	25 / 50
35% in Internal Assessment	:	11 / 30

Total 50% aggregate	:	100 / 200

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II MBBS–COMMUNITY MEDICINE
PRESCRIBED TEACHING HOURS– 200 Hrs.
(INCLUDING 8 WEEKS POSTINGS OF 3 Hrs. EACH)

SYLLABUS SEMESTER 3 TO 5

	Lectures	Practicals	Total
1. CONCEPTS IN COMMUNITY HEALTH	4 hrs.	-	4 hrs.

Health Dimensions. Positive Health. Determinants Of Health, Ecology of Health. Right to Health. Indicators of Health. Health situation in India, National Health Policy. Natural History of Disease. Concepts of Disease Control. Levels of prevention & Intervention. Functions of a Community Physician. WHO. Disease Cooling System.

2. ENVIRONMENT AND HEALTH	10 hrs.	12 hrs.	22 hrs.

Introduction to environment. Sources of Water Pollution. Water Purification. Water quality. WHO – Standards. Surveillance of Drinking Water quality. Harrock's Test. Water sampling. Air Pollution. Indices of Thermal Comfort, Monitoring Air Pollutants. Control and prevention of pollution. Standards of ventilation. Good Lighting and standards, Noise pollution and control. Radiation sources and control. Air temperature Measurement. Heat streets Indices, effects and Control cold streets. Humidity precipitation. Housing standards. Solid wastes. Disposal Excreta disposal methods. Modern sewage treatment

2. MEDICAL ENTOMOLOGY & PARASITOLOGY	2 hrs.	9 hrs.	11 hrs.

Anthropoid Borne Diseases and transmission. Bionomics of Mosquito. Mosquito Control Measures. Housefly, Tse-tse fly. Lice. Fleas. Flea indices. Ticks and Mites. Cyclops. Control measure. Insecticides.

Rodents and Disease. Control measures. Entomology demonstrations.

3. NUTRITION AND HEALTH	10 hrs.	9 hrs.	19 hrs.

Definitions & concepts. Proximate Principles, Nutrients. Deficiency Diseases. Assessment. Prevention, Sources. Requirements.

Nutrition Profile of Foods. Energy and Requirements. Recommended Daily Allowance. Protein assessment. Dietary Goals. Community Nutrition Problems. LBW, PEM, IDD. Fluresis. Anemia. Nutritional Status Assessment. Nutritional Surveillance. Growth Monitoring. Nutritional Status indicatory. Ecology of malnutrition. Prevention. Food Surveillance. Food toxicants. Food Borne diseases. Food adult iteration National Nutrition Programmes Nutrition Assessment schedule. Nutrition problem Exercises.

5. HEALTH EDUCATION & COMMUNICATION	2 hrs.	3 hrs.	5 hrs.

Definition, Objectives, Approaches and Principles of Health Education Practices Of Health Education. Planning & Evaluation. Administrations and Organizations in India. Health Education Demonstration in a community.

6. PRIMARY HEALTH CARE	4 hrs.	6 hrs.	10 hrs.

Concepts, Health care systems. Levels of Health Care. PHC-Elements. Principles. Health for All Goals. Health Problems of India. National Health Policy. Primary Health care in India. PHC-Community Health Centre. Health Insurance. Voluntary Health Agencies. National Health Programmes

7. INTERNATIONAL HEALTH SYSTEMS	2 hrs.	-	2 hrs.

Historical development of Health Organisations. WHO-objective. Structure, Functions. U.N. Agencies. Bilateral Agencies, N.G. Agencies.

8. PRINCIPLES OF EPIDEMIOLOGY	8 hrs.	15 hrs.	23 hrs

Aims. Disease frequency. Distribution, Determinants. Clinical epidemiology. Basic measurements in Epidemiology, Rates and Ratios Standardisation. Epidemiological methods. Description, Analytical, experimental Epidemiology. Association and causation. Uses of Epidemiology Immunity. Infectious Diseases Epidemiology. Investigation of epidemic. Disinfection. Disease prevention and Control. Immunizing Agents. Epidemiological problems.

9. SCREENING FOR DISEASES	2 hrs.	9 hrs.	11 hrs.

Concepts. Uses, Criteria, Sensitivity Specificity. Borderline problems. Epidemiological problems.

10. MEDICAL STATISTICS	2 hrs.	18 hrs.	20 hrs.

Health information systems. Components, uses, services. Population Health Data Surveys. Elementary Statistical Methods. Tabulation. Charts, Statistical Averages, Measures of dispersion, Normal Distribution. Chi-Square Test. Correlation and progression. Statistical problems.

11. EPIDEMIOLOGY OF COMMUNICABLE DISEASES	10 hrs.	21 hrs.	31 hrs.

Chicken Pox. Measles, Influenza, Diphtheria, Pertusis, Menigitis, Tuberculosis, Mumps, Rubella, Acute Respiratory infections. Small Pox Eradication. Poliomyelitis, Cholera. Viral Hepatitis. Amoebiasis, Ascariasis Ancylostamiosis. Dracunculosis. Food Poisoning, Typhoid, Acute diarrhoea Diseases. Malaria, Filaria, Dengue, Rabies, Yellow fever, Japanese Encephalitis, KFD, Brucellosis, Plague, Human Salmonellosis, Trachoma

Tetanus, Leprosy, STD, AIDS, Yaws, Leishmaniasis. Hytatid Diseases, Typhus Ricke tsiat, Zoonosis, Taeniasis. Emerging Infectious Diseases, Epidemiological exercises.			
Clinic-Social Case studies	-	21 hrs.	21 hrs.
Family Health Survey, Survey * and Community diagnosis	-	21 hrs.	21 hrs.
	56 hrs.	144 hrs.	200 hrs.

BLOCK POSTINGS – I (III SEMESTER) – TOTAL 72 HOURS

Sl.No	Exercises	
01.	Environment Health Model and Demonstration	..6 hours
02.	Entomology specimens demonstration	..6 hours
03.	Parasitology, Bacteriology specimens	..6 hours
04.	Insecticides, Disinfectants and Rodenticides.	..3 hours
05.	Nutrition specimens	..6 hours
06.	Meteorological instruments	..3 hours
07.	Environment Health and statistical problems	..3 hours
08.	Water and Nutrition problems	..3 hours
09.	Epidemiological exercises	..6 hours
10.	Introduction to Clinico-Social case studies	..6 hours
11.	Family Health Survey, Methodology and Community diagnosis	..6 hours
12.	Community Survey	..6 hours
13.	Pure statistics methodology	..6 hours
14.	End posting evaluation – Theory	..3 hours
15.	End post evaluation – Practicals	..3 hours
	Total Block Posting I	..72 hours

BLOCK POSTING – II (IV SEMESTER) TOTAL 72 HOURS

01.	Demography and statistical problems	..6 hours
02.	Demonstration – Vaccines cold chain equipment	..6 hours
03.	Statistical and Epidemiological problems	..6 hours
04.	Visit to a P.H.C.	..3 hours
05.	Visit to a sub-centre	..3 hours
06.	Health education demonstration in urban slum population	..3 hours
07.	Community Survey in urban population	..6 hours
08.	Data Analysis and write up	..6 hours

09. Clinic Social Case studies – ANC., PNC., Medical termination of pregnancy case, protein-energy malnutrition, Scabies, Fungal infection, Diarrhoeal disease, Upper respiratory infection, leprosy, Tuberculosis, STD, Filariasis, Obesity, Post Polio Paralysis Hypertension, Diabetes, Cancer early stage, family planning case counselling	..15 hours.
10. Project report analysis and preparation	..12 hours
11. End posting evaluation – Practicals	.. 3 hours
12. End posting evaluation – Theory	.. 3 hours
Total Block posting – II	..72 hours

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