Hand Book for Students

MBBS COURSE REGULATIONS
(subject to modification from time to time)

Dr. NTR UNIVERSITY OF HEALTH SCIENCES
VIJAYAWADA – 520 008
REGULATIONS FOR MBBS DEGREE COURSE

These regulations shall be called “The revised regulations for the MBBS course of the Dr. NTR University of Health Sciences, Vijayawada”. These regulations are applicable to the students who are admitted to the course.

I. 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 to provide 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 to engage in professional activities the graduate shall endeavor, to acquire basic training in different aspects of medical care.
4. The importance of the 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 recognized in the prescribed curriculum. Adequate exposure, to such experiences should be available 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 training should emphasize health and community orientation instead of concentrating only on disease and hospital orientation or being concentrated on curative aspects. As such all the basic concepts of modern scientific medical education are to be adequately dealt with.
6. Enough opportunity 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 should be capable of functioning independently in both urban and rural environment. He/she shall endeavor 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 problems 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 analyze 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 are 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 sheer 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 or 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 outpatient and emergency departments and within the community including peripheral health care institutions. The outpatient departments 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 student's 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 amidst traditional subject areas using a problem based learning approach starting with clinical or community cases and exploring the relevance of various pre-clinical 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. In the integrated teaching programme, an ETHICAL class, personality development teaching has to be conducted to improve the students discipline and capabilities.

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 for providing learning resource material to teachers.
18. To implement this revised curriculum the vacation period of students in one calendar year should not exceed one month during the 4½ years Bachelor of Medicine and Bachelor of Surgery (MBBS) course.

II. Eligibility

1. No candidate shall be admitted to the Bachelor of Medicine and Bachelor of Surgery (MBBS) course until he/she has completed the age of 17 years on or before 31st December of the academic year in which the candidate is seeking admission.

2. No candidate shall be admitted to the first Bachelor of Medicine and Bachelor of Surgery (MBBS) course until he/she has passed a qualifying examination as under.

   a) Two years intermediate examination of Board of Intermediate Education, Andhra Pradesh under 10+2 pattern with Physics, Chemistry, Botany, Zoology or Biology as optional which shall include a practical test in each subject. (OR)

   b) Any other examination (of 10+2pattern) recognised by the University in Andhra Pradesh or Board of Intermediate Education, Andhra Pradesh, with Physics, Chemistry and Biology as optional subjects which shall include a practical test in each of these subjects. (OR)

   c) The pre-professional / premedical examination with Physics, Chemistry and Biology, after passing either the higher secondary school examination or the Pre-University or an equivalent examination. The pre-professional/pre-medical examination shall include a practical test in Physics, Chemistry & Biology and also English as a compulsory subject. (OR)

   d) The first year of the three years degree course of a recognized University, with Physics, Chemistry and Biology including practical test in these subjects provided the examination is a University Examination and candidate has passed 10+2 with English at a level not less than a core course. (OR)

   e) B.Sc Examination of an Indian University, provided that he/she has passed the B.Sc examination with not less than two of the following subjects - Physics, Chemistry, Biology (Botany, Zoology) and further that he/she has passed the earlier qualifying examination with the following subjects - Physics, Chemistry, Biology and English. (OR)

   f) Any other examination whose scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking Physics, Chemistry and Biology including a practical test in each of these subjects and English.

Note: i) The pre-medical course may be conducted either in a Medical College or Science College.

ii) The marks obtained in Mathematics are not to be considered for admission to MBBS course.

iii) Candidates possessing qualification of the University / Board of an institution outside the State should produce a Certificate of Equivalence from the Registrar, Dr. NTR University of Health Sciences, Vijayawada
III. SELECTION OF STUDENTS:
The selection of students to medical colleges is based on the merit of the candidates in the EAMCET examination conducted by the Government of Andhra Pradesh.

a) To be eligible for competitive entrance examination, the candidate must have passed any of the qualifying examinations as enumerated above at II.

b) A candidate for admission to medical course must have passed Physics, Chemistry, Biology and English individually and must have obtained 50% marks in Physics, Chemistry and Biology taken together, both at qualifying examination.

c) However, in respect of candidates belonging to scheduled castes / Scheduled Tribes and other Backward Classes (OBC) the qualifying marks should be 40% instead of 50%.

IV. REGISTRATION:
A candidate admitted to the course in any of the affiliated colleges shall apply for registration with this University in the prescribed form within one month from the date of joining the college. The application for registration in the prescribed form along with the fee prescribed should be submitted to this University through the Head of the College. The University in turn will allot an identification number that will be valid till the student completes this course. Without this identification number, the student will not be considered as a bonafide student of the university and his application for the university exam will not be accepted.

V. DURATION OF THE COURSE:
The duration of the certified study of the Bachelor of Medicine and Bachelor of Surgery course shall be 4½ Academic Years followed by one year compulsory rotating Internship. Normally the MBBS course shall commence on the 1st August of an academic year.

The period of 4½ years is divided into (9 semesters each semester of 6 months) three phases.

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<th>3rd MBBS Part-I Examination during 7th (seventh) Semester</th>
<th>3rd MBBS Part-II (final) Examination during 9th (ninth) Semester</th>
<th>Internship</th>
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<td>Phase -1</td>
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<td>Phase 3</td>
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<td>1 2 3 4 5 6 7 8 9</td>
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</table>

Each Semester is of 6 months duration
a  **Phase-I (1\textsuperscript{st} MBBS)** (1 year two semesters) consists 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. The time shared between the letter two will be in the ratio of 2:1.

b  **Phase-II (2\textsuperscript{nd} MBBS)** (1½ years-three semesters) consists of para clinical & clinical subjects. The para-clinical subjects shall consist of Pathology, Pharmacology, Microbiology, Forensic Medicine including Toxicology and part of community Medicine. During this phase teaching of para-clinical and clinical subjects shall be done concurrently. The clinical subjects shall consist of all those detailed below in Phase-III of the time for para-clinical teaching approximately equal time shall be allotted to Pathology, Pharmacology, Microbiology and Forensic Medicine & Community Medicine combined(1/3 Forensic Medicine and 2/3 community Medicine).

c  **Phase-III (3\textsuperscript{rd} MBBS)** (Two year's-four semesters) 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 specialties, Paediatrics, Surgery and its allied specialties including Orthopedics, Obstetrics and Gynaecology, Community Medicine and Emergence Medicine.

i. The training in Medicine and its allied specialties will include General Medicine, Paediatrics, Tuberculosis and Chest diseases, Skin and Sexually Transmitted diseases, Psychiatry, Radio-diagnosis, Infectious diseases etc.

ii. The training in Surgery and its allied specialties will include General Surgery, Orthopaedics including Physiotherapy and Rehabilitation, Ophthalmology, Oto-Rhinolaryngology, Anaesthesia, Dentistry, Radio-therapy etc.

iii. The Obstetrics & Gynaecology training will include family medicine, family welfare, planning etc.,

iv. Emergency Medicine: This must be a general department. Till such time a full fledged department is created this may be under the control of the department of anaesthesia.

Besides clinical postings the rest of the teaching hours should be divided between didactic lectures, demonstrations, seminars, group discussions etc., in various subjects.

The clinical posting in Community Medicine for one month each in the semesters of IV, VI & VII instead of the present of postings in the III, IV & VI semesters. The postings in VII semester will be more useful as the students will be appearing for University examination at the end of 7\textsuperscript{th} semester.
VI. PROMOTION
   a) Passing in 1st professionals is compulsory before proceeding to phase II training.
   b) A student who fails in the II professional examination, shall not be allowed to appear in III professional Part-1 examination unless he passes all subjects of II professional examination.
   c) Passing in III Professional (Part 1) examination is not compulsory before entering for 8th and 9th semester training, however passing of III professional(Part-I) is compulsory for being eligible for III professional (Part-II) examination.

VIII. MEDIUM OF INSTRUCTION
     English shall be the medium of instruction for study and examinations of the Bachelor of Medicine & Bachelor of surgery course.

IX. ATTENDANCE:
    75% of attendance in a subject is compulsory inclusive of attendance in non-lecture teaching i.e. seminars, group discussion, tutorials, demonstrations, practicals, hospital postings, bedside clinics, failing which the student will not be permitted to appear for the University exam with his batch of students. Attendance shall be calculated from the total number of hours prescribed by UHS / MCI and not the number of classes conducted.

     Referred students should also have 75% of attendance in both theory and practical.

X. INTERNAL ASSESSMENT:
   a) General consideration applicable to all subjects of MBBS:
      1. Internal assessment marks including 50% theory and 50% practicals / clinicals in all subjects.
      2. A student must secure at least 35% marks of the maximum marks fixed for internal assessment in a particular subject to be eligible to appear for the final university exam of that subject.
      3. Regular, Periodical notified examinations with, notified syllabus shall be conducted.
      4. Last exam conducted is pre final it is mandatory and should be conducted university exam pattern i.e. theory, practical /clinical.
      5. 5 marks are earmarked for record to be included in practical internal assessment examinations for all subjects.
      6. If only one practical examination is conducted, those marks are mandatory for considering the internal assessment marks. If the candidate is absent for any of the exams, the marks in that exam shall be taken as zero.
      7. The internal assessment marks shall be displayed in the notice board and shall be dispatched to the university soon after each internal assessment examination. As per the existing rules internal assessment marks should be sent so as to reach the University atleast two weeks before the University theory examination.
8. While forwarding the examination application forms of the students, the Principals should check the attendance, internal assessment marks and name as in intermediate / equivalent certificate.

9. Fresh internal assessment examination is mandatory to the referred and detained students. The previous internal assessment marks will not be considered. (vide 183rd resolution of Executive Council of Dr. NTR UHS dt,06-06-2009).

b) 1st MBBS:
Minimum number of internal assessment exams shall be 4 in each subject out of which atleast one will be in Practical / Clinicals. Internal assessment examinations shall be conducted uniformly in all colleges in a particular period as notified by the University. The last internal assessment examination should be completed 20 days before the commencement of final examination with preparation holidays of 10 days. After ignoring the marks of the examination in which the candidate got the least marks, the average marks of the remaining examinations will be counted. The theory and practical marks should be considered separately and computed as below. MCQs can be introduced in the internal assessment examinations.

If marks obtained by a candidate are 12, 16 and 10 out of 20 in the I, II and III internal theory exams i.e. pre final exam then best of the first two exams=16; III exam=10.
Average of the two = 13.
Theory = $\frac{13}{20}$; Practical = $\frac{17}{20}$; Total = $\frac{30}{40}$

Record marks shall be included in practical internal assessment examinations.

c) II MBBS:
Pathology, Microbiology and Pharmacology subjects are allotted 30 marks each while Forensic Medicine subject is allotted 20 marks for Internal assessment.

Two Theory Internal Assessment examinations should be conducted at the end of 3rd and 4th semesters and one theory and one practical internal assessment examinations will be conducted at the end of 5th semester.

d) Final MBBS Part-I & Final MBBS Part-II:

A minimum of Two Theory Internal Assessment examinations and one clinical internal assessment examination will be conducted for all the subjects of Final MBBS. The aggregate of all these three internal assessment examinations will be taken as internal assessment marks and should be reduced to the level of internal assessment marks. ENT, Ophthalmology and Paediatrics have each 20 marks, Obst. + Gynace. 30, Community Medicine 40 and General Medicine and Surgery each has 60 internal assessment marks.
XI. **RE-ADMISSION AFTER DISCONTINUATION BREAK OF STUDY:**

Every student shall attend his/her classes (Theory, Practical and Clinical) on all working days unless the Principals grants him / her leave of absence. If a student absents continuously for a period of 91 days or more and seeks permission to attend the course before one year after discontinuation, his/her application shall be forwarded to Registrar while permitting the student to join. The Vice-chancellor may grant leave of absence attaching such conditions as he may deem necessary. Candidates who are absent for continuous period of one year or more without permission shall be deemed to have forfeited the admission into the course and his/her studentship shall stand cancelled with out any further notice.

XII. **MIGRATION / TRANSFER OF CANDIDATES**:

1. 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 and 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 to another is permissible only if both the 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 respect of the receiving 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.

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 is 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 or 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 receipt of the request for migration.
5. A student who has joined another college on migration shall be eligible to appear in the IInd 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 MCI Regulation at clause 12 (1) i.e. about attendance given at rule IX in page No.6 of this book.

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 shall 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 of 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 Colleges at any point of time”.

XIII. VACATION:
The vacation for the students is 30 days per academic year. The vacation may be declared by the Principal in phased manner at the discretion of the Principal taking into consideration two weeks of summer vacation and the remaining period for religious festivals.

XIV. COMPULSORY INTERNSHIP:
1) General:
Internship is a phase of training wherein a graduate is expected to learn methods / modalities for actual practice of medical and health care and acquire skills under supervision so that he/she may become capable of functioning independently.

2) Foundation course stage III:
The purpose, at this stage, is to facilitate intern to put into day to day practice all the knowledge, skills and attitude learnt during the earlier years. The course should be designed so as to relate the same with the national health policies and programmes. The contents to be included are:

1. Professional behaviour and Ethics.
2. Writing clinical notes in outpatient as well as inpatient record along with daily progress notes, discharge slips and case summaries.
3. Rational therapeutics.
4. Appropriate use of laboratory, radiological and other diagnostic tools.
5. Medicolegal documentations (under supervision/guidance).
6. Proper collection, labeling, storage and dispatch of specimens.
7. Getting informed consent.
8. Introduction to International Classification of Disease.
9. Knowledge about various regulations and code of conduct.
10. Sensitization to the behavioral and sociocultural aspect of the community where he/she is likely to be placed.
11. Obtain dying declaration.
12. BTLS and trauma support.
13. Managerial skills including leadership and team work.
15. Management of biomedical waste.
16. Concept of Evidence Based Medicine.
17. Decision making.

**Teaching Learning Methods:**
1. Interactive sessions.
2. Case studies.
3. Triggers.
4. Role plays.

**Assessment:**
Programme evaluation and feedback from participants.

The skills developed should be assessed at the end of each posting, as applicable to the corresponding disciplines.

3) **Specific Objectives:**
At the end of the internship training, the students shall be able to:
(i) diagnose clinically common disease conditions encountered in practice and make timely decision for referral to higher level;
(ii) use discreetly the essential drugs, infusions, blood or its substitutes and laboratory services;
(iii) manage all type of emergencies-medical, surgical obstetric, neonatal and paediatric, by rendering first level care;
(iv) demonstrate skills in monitoring of the National Health Programmes and schemes, oriented to provide preventive and promotive health care services to the community;
(v) develop leadership qualities to function effectively as a leader of the health team organized to deliver the health and family welfare service in existing socio-economic, political and cultural environment;
(vi) render services to chronically sick and disabled (both physical and mental) and to communicate effectively with patient and the community.

4) Time allocation to each discipline is approximate and shall be guided more specifically by the actual experience obtained. Thus a student serving in a district or taluk hospital emergency room, may well accumulate skills in surgery, orthopaedics, medicine, Obstetrics and Gynaecology and Paediatrics during even a single night on duty.
Re-sponsible authorities from the medical college shall adjust the intern experience to maximize intern’s opportunities to practice skills in patient care in rough approximation of the time allocation suggested.

5) **Duration:**
   a. Every candidate will be required after passing the Final MBBS examination to undergo 12 months compulsory rotational Internship to the satisfaction of the college authorities and Dr. NTR University of Health Sciences so as to be eligible for the award of degree of Bachelor of Medicine and Bachelor of Surgery (MBBS) and full registration.

<table>
<thead>
<tr>
<th>COMPULSORY</th>
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<tbody>
<tr>
<td>Community Medicine</td>
<td>2 months</td>
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<tr>
<td>Medicine including 15 days of Psychiatry</td>
<td>2 months</td>
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<tr>
<td>Surgery including 15 days Anaesthesia</td>
<td>2 months</td>
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<tr>
<td>Obst. &amp; Gynaec, including Family Welfare Planning</td>
<td>2 months</td>
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<tr>
<td>Paediatrics</td>
<td>1 month</td>
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<tr>
<td>Orthopaedics including PMR</td>
<td>1 month</td>
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<tr>
<td>ENT</td>
<td>15 days</td>
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<tr>
<td>Ophthalmology</td>
<td>15 days</td>
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<tr>
<td>Casualty</td>
<td>15 days</td>
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<tr>
<td>Elective posting (1 X 15 days)</td>
<td>15 days</td>
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Subjects for Elective posting will be as follows:
   i) Dermatology and Sexually Transmitted Diseases.
   ii) Tuberculosis and Respiratory Diseases.
   iii) Radio-Diagnosis
   iv) Forensic Medicine
   v) Blood Bank
   vi) Psychiatry

Note: Structure internship with college assessment at the end of the internship".
b) Time Distribution:

<table>
<thead>
<tr>
<th>COMPULSORY</th>
<th>ii. Elective postings: 1 Month</th>
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<tr>
<td>12 months compulsory rotational Internship</td>
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<tr>
<td>i. Compulsory subjects: 11 Months</td>
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<tr>
<td>Community Medicine</td>
<td>- Dermatology and Sexually</td>
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<tr>
<td>Medicine including 15 days of Psychiatry</td>
<td>Transmitted Diseases.</td>
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<tr>
<td>Surgery including 15 days Anaesthesia</td>
<td>- Psychiatry</td>
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<tr>
<td>Obst. &amp; Gynaec, including Family Welfare Planning</td>
<td>- Tuberculosis and Respiratory</td>
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<tr>
<td>Paediatrics</td>
<td>Diseases</td>
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<tr>
<td>Orthopaedics including PMR</td>
<td>- Anaesthesia</td>
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<td>ENT</td>
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<tr>
<td>Ophthalmology</td>
<td>- Physical Medicine and</td>
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<tr>
<td>Casualty</td>
<td>Rehabilitation</td>
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<tr>
<td>Elective posting (1 X 15 days)</td>
<td>- Forensic Medicine and</td>
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<td></td>
<td>Toxicology</td>
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<td></td>
<td>- Blood Bank and Transfusion</td>
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<td></td>
<td>Department</td>
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</tbody>
</table>

- Dermatology and Sexually Transmitted Diseases.
- Psychiatry
- Tuberculosis and Respiratory Diseases
- Anaesthesia
- Radio-diagnosis
- Physical Medicine and Rehabilitation
- Forensic Medicine and Toxicology
- Blood Bank and Transfusion Department

D) House surgeons should maintain Logbooks.

d) At the time of causality posting students should be taught about medico legal documentation & should observe various types of medicolegal cases.

During 2 months period allotted to Community Medicine Department, the Internee shall be trained to acquire filed / practical knowledge, one month at District/ Taluk Hospital (or) U.F.W.C.Centre, one month at P.H.C and one month at R.H.C and during the above 2 months time he shall participate in Government of India / Ministry of Health and Family Welfare Department approved/ sponsored training programmes also. Where the internee shall be posted as per the decision of institution’s competent authority.

All parts of the Internship shall be done as far as possible in the teaching hospitals attached to the Institution, where the candidate studied MBBS degree course. He/she has to do the Internship in the Hospitals specified by the University. In case of any difficulties the matter will be referred to Medical Council of India on individual merit.

The University shall issue a provisional MBBS pass certificate on passing the final examination. The State Medical Council will grant provisional registration to the candidate on production of the provisional MBBS pass certificate. The provisional registration will be for a period of one year. In the event of shortage or unsatisfactory work, the appropriate authorities may suitably extend the period of provisional registration and the compulsory rotating internship.

The internee shall be entrusted with clinical responsibilities under direct supervision of senior medical officer. They shall not be working independently. Interns will not issue a medical certificate or a death certificate or a medicolegal document under their signature.
In recognition of the importance of hands-on experience, full responsibility for patient care and skill acquisition, Internship should be increasingly scheduled to utilize clinical facilities available in District Hospital, Taluka Hospital, Community Health Centre and Primary Health Centre, in addition to Teaching Hospital. A critical element of internship will be the acquisition of specific experiences and skills. More emphasis should be given for hands as experience.

Provided that whereas internee is posted to District/Sub-divisional Hospital for training there shall be a committee consisting of representatives of college/university, the State Government and the District administration, who shall regulate the training of such trainee. Further, such trainee shall obtain a certificate of satisfactory completion of training from the relevant administrative authorities and countersigned by the Principal/Dean of college. Adjustment to enable a candidate to obtain training in elective clinical subjects may be made.

Each medical college shall establish links with one entire district extending out-reach activities. Similarly, Reorientation of Medical Education (ROME) scheme may be suitably modified to assure teaching activities at each level of district health system, which will be coordinated by the Dean/Principal of the medical college.

Out of one year, 6 months shall be devoted learning tertiary care being rendered in teaching hospital/district hospital suitably staffed with well qualified staff, 1 (one) month of secondary care in small district of or Taluk Hospital / community health centre and 1 (one) month in primary Health care full attention to the implementation of National Health Programme at the community level. One month of Primary care training may be under the preceptorship of a practicing family physician of voluntary agency or other primary health care provider.

One year’s approved service in the Armed Forces Medical Services after passing the Final MBBS examination shall be considered as equivalent to the pre-registration training detailed above. Such training as far as possible, be at the Base/General Hospital.

e. Issue of Internship completion Certificate:

The heads of institutions shall issue a certificate of successful completion of internship to each candidate after satisfying that the candidate has completed the training programme and has acquire the skills to function independently.

XV. **AWARD OF DEGREE:**

The University on satisfactory completion of the compulsory internship shall be award the degree.

XVI. **CLASSIFICATION OF RESULTS:**

1. A candidate is declared as passed in second class if he/she secures 50% marks in aggregate in all subjects of the phase with a minimum of 50% in theory plus orals and 50% in practicals in that subject. A candidate securing less marks is failed.
2. First class in a particular phase may be awarded to a candidate who secures 65% or more of aggregate marks in all the subjects of the phase and passes all the subjects in the first regular appearance.

3. First class with distinction in a phase may be awarded to a candidate who secures 75% of aggregate marks and above in all the subjects and passes all the subjects in the first appearance.

XVII. SCHEME OF UNIVERSITY EXAMINATION:
There shall be one main and one supplementary examination in a year and should be a gap of 6 months between the main examination and the supplementary examination.

<table>
<thead>
<tr>
<th>Examination</th>
<th>Subject</th>
<th>Theory</th>
<th>Viva</th>
<th>Internal Assessment</th>
<th>Practi</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>Paper 1</td>
<td>Paper 2</td>
<td>Total</td>
<td>50% th. + 50% Pra/clin</td>
<td>cal</td>
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<tr>
<td>I MBBS (At the end of 2nd Semester)</td>
<td>Anatomy</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Physiology</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>20</td>
<td>40</td>
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<tr>
<td>II MBBS (At the end of 5th Semester)</td>
<td>Pharmacology</td>
<td>40</td>
<td>40</td>
<td>80</td>
<td>15</td>
<td>15+15=30</td>
</tr>
<tr>
<td></td>
<td>Microbiology</td>
<td>40</td>
<td>40</td>
<td>80</td>
<td>15</td>
<td>15+15=30</td>
</tr>
<tr>
<td></td>
<td>Pathology</td>
<td>40</td>
<td>40</td>
<td>80</td>
<td>15</td>
<td>15+15=30</td>
</tr>
<tr>
<td></td>
<td>Forensic Medicine</td>
<td>40</td>
<td>-</td>
<td>40</td>
<td>10</td>
<td>15+15=30</td>
</tr>
<tr>
<td>III MBBS Part-I (At the end of 7th Semester)</td>
<td>ENT</td>
<td>40</td>
<td>-</td>
<td>40</td>
<td>10</td>
<td>10+10=20</td>
</tr>
<tr>
<td></td>
<td>Ophthalmology</td>
<td>40</td>
<td>-</td>
<td>40</td>
<td>10</td>
<td>10+10=20</td>
</tr>
<tr>
<td></td>
<td>SPM</td>
<td>60</td>
<td>60</td>
<td>120</td>
<td>10</td>
<td>20+20 =40</td>
</tr>
<tr>
<td>III MBBS Part-II (At the end of 9th Semester)</td>
<td>Medicine</td>
<td>60</td>
<td>60</td>
<td>120</td>
<td>20</td>
<td>30+30=60</td>
</tr>
<tr>
<td></td>
<td>Surgery</td>
<td>60</td>
<td>60</td>
<td>120</td>
<td>20</td>
<td>30+30=60</td>
</tr>
<tr>
<td></td>
<td>Obstetrics &amp; Gynecology</td>
<td>40</td>
<td>40</td>
<td>80</td>
<td>30</td>
<td>20+20 =40</td>
</tr>
<tr>
<td></td>
<td>Pediatrics</td>
<td>40</td>
<td>-</td>
<td>40</td>
<td>10</td>
<td>10+10=20</td>
</tr>
</tbody>
</table>

Criteria for Pass
1. Theory & Orals (Viva) together – 50%
2. Practical –50%
3. Internal – 35% for eligibility
Aggregate – 50%.

If any candidate is absent in any component of examinations i.e. either in theory in part, practical or viva voce, he / she deemed to be absent and declared fail in that subject.
(recommendations of the academic senate 2009 approved by 183rd E.C.)
**Scheme of First professional examination:**
( Pre-clinical Subjects-Biochemistry, Anatomy, Physiology)
conducted at the end 2nd of semester.

<table>
<thead>
<tr>
<th>Scheme of practical:</th>
<th>Scheme of practical:</th>
<th>Scheme of practical:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Qualitative - 15 marks</td>
<td>a) Major exercise – Dissected parts from Head and Neck, Abdomen, Pelvis and Thorax -10marks</td>
<td>a) Hematology Long Experiment (RBC, WBC, Hb etc) -10marks</td>
</tr>
<tr>
<td>b) Quantitative- 15 marks</td>
<td>b) Minor exercises – Dissected parts from Extremities - 5 M</td>
<td>b) Identification of graphs Problems &amp; Calculation - 5marks</td>
</tr>
<tr>
<td>c) Interpretation of Lab. Data - 5 marks</td>
<td>c) Surface marking/ clinically Oriented question 5 marks</td>
<td>c) Short experiment (Grouping, BT, CT, Reflexes Cranial Nerves) - 5marks</td>
</tr>
<tr>
<td>d) Spotters &amp; Charts - 5 marks</td>
<td>Practical – 1 Total- 20</td>
<td>Practical – 1 Total- 20</td>
</tr>
<tr>
<td>Total 40</td>
<td>Practical – 2</td>
<td>Practical – 2</td>
</tr>
<tr>
<td></td>
<td>Practical – 1</td>
<td>a) Long Experiment Clinical examination of a specific system - 10marks</td>
</tr>
<tr>
<td></td>
<td>Practical –2</td>
<td>b) Amphibian graph Muscle/Nerve/Heart - 5marks</td>
</tr>
<tr>
<td></td>
<td>Gross Anatomy</td>
<td>c) Spotters Clinical cases and charts - 5marks</td>
</tr>
<tr>
<td></td>
<td>Histology including genetics</td>
<td>Practical – 2 Total - 20</td>
</tr>
<tr>
<td></td>
<td>a) Spotters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Stained Slides for discussion(2slides)- 10marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Genetic Exercise- 5marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Practical – 2 Total- 20</td>
<td></td>
</tr>
<tr>
<td>Orals 20marks</td>
<td>Orals 20marks</td>
<td>Orals 20marks</td>
</tr>
<tr>
<td></td>
<td>a) Soft parts - 5 marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Osteology - 5 marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Radiology - 5 marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) Embryology - 5 marks</td>
<td></td>
</tr>
<tr>
<td>Internal assessment- 40marks</td>
<td>Internal assessment- 40marks</td>
<td>Internal assessment- 40marks</td>
</tr>
<tr>
<td>Theory: 2 ½ hrs duration</td>
<td>Theory: 2 ½ hrs duration</td>
<td>Theory: 2 ½ hrs duration</td>
</tr>
<tr>
<td>Biochemistry-1 50marks</td>
<td>Anatomy-1 50marks</td>
<td>Physiology-1 50marks</td>
</tr>
<tr>
<td>Biochemistry-2 50marks</td>
<td>Anatomy -2 50marks</td>
<td>Physiology-2 50marks</td>
</tr>
</tbody>
</table>

Scheme of Theory examinations each held on 2 consecutive days

1. One Structured question 10 marks
2. One applied question (structured) 10 marks
3. 5 short answer type questions 5 x 4 = 20 marks
4. 5 brief answer type questions 5 x 2 = 10 marks
   Total 50 marks
**Scheme of second professional examination:**

(Para-clinical subjects: Pathology, Microbiology, Pharmacology and Forensic Medicine)

conducted at the end 5th of semester.

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Microbiology</th>
<th>Pharmacology</th>
<th>Forensic Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theory:</strong> 2 papers of 40 marks each held on 2 consecutive days. - 2 hrs duration</td>
<td><strong>Theory:</strong> 2 papers of 40 marks each held on 2 consecutive days. - 2 hrs duration</td>
<td><strong>Theory:</strong> 2 papers of 40 marks each held on 2 consecutive days. - 2 hrs duration</td>
<td><strong>Theory:</strong> 1 paper of 40 marks. - 2 hrs duration</td>
</tr>
<tr>
<td>Scheme of practical:</td>
<td>Scheme of practical</td>
<td>Scheme of practical</td>
<td>Scheme of practical</td>
</tr>
<tr>
<td>i) Spotters Slides - 4 marks Instrument - 1 mark</td>
<td>i) Spotters - 5 marks</td>
<td>i) Experimental Pharmacology - 8 marks</td>
<td>I. Autopsy - 5 marks</td>
</tr>
<tr>
<td>ii) Two Gross specimens (Morbid anatomy) - 4 marks</td>
<td>ii) Grams staining - 5 marks</td>
<td>ii) Clinical Pharmacology exercise - 5 marks</td>
<td>II. Spotters - 5 marks</td>
</tr>
<tr>
<td>iii) Short blood exercises HB / blood group - 4 marks</td>
<td>iii) Special staining - 5 marks</td>
<td>iii) Prescription writing - 4 marks</td>
<td>II. clinical case - 5 marks</td>
</tr>
<tr>
<td>iv) Abnormal peripheral Smear - 6 marks</td>
<td>iv) Parasitology examination - 5 marks</td>
<td>iv) Criticism - 4 marks</td>
<td>V. Age estimation - 5 marks</td>
</tr>
<tr>
<td>v) Urine examination - 6 marks Total - 25 marks</td>
<td>v) Applied Microbiology exercises - 5 marks Total - 25 marks</td>
<td>v) Spotters - 4 marks Total - 25 marks</td>
<td>Total - 20 marks</td>
</tr>
<tr>
<td><strong>Orals</strong> 15 marks</td>
<td><strong>Orals</strong> 15 marks</td>
<td><strong>Orals</strong> 15 marks</td>
<td><strong>Orals</strong> 10 marks</td>
</tr>
<tr>
<td>Internal assessment - 30 marks</td>
<td>Internal assessment - 30 marks</td>
<td>Internal assessment - 30 marks</td>
<td>Internal assessment - 30 marks</td>
</tr>
<tr>
<td>Theory: 2 hrs duration Pathology-1 40 marks Pathology-2 40 marks</td>
<td>Theory: 2 hrs duration Microbiology-1 40 marks Microbiology-2 40 marks</td>
<td>Theory: 2 hrs duration Pharmacology-1 40 marks Pharmacology-2 40 marks</td>
<td>Theory: 2 hrs duration Forensic medicine One paper - 40 marks</td>
</tr>
</tbody>
</table>

**Scheme of Theory examinations**

each paper carries 40 marks and consists of time 2 hours each held on 2 consecutive days

1. One Structured question = 10 marks
2. 5 short answer type questions 5 x 4 = 20 marks
3. 5 brief answer type questions 5 x 2 = 10 marks
4. Total = 40 marks
<table>
<thead>
<tr>
<th>Scheme of Third professional Part – I examination</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Clinical Subjects- ENT, Ophthalmology and Community Medicine)</td>
<td></td>
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<tr>
<td>Conducted at the end 7th of semester.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheme of practical: Each candidate examines 4 cases. A candidate should record the diagnosis &amp; management of the case. A set of examiners (comprising one internal and one external), examines the candidate for two cases.</td>
<td>Scheme of practical: i) Two cases 2X15marks. Duration of the clinical examination will be 20 minutes for each of the 2 cases. ii) A candidate has to secure a minimum of 15 marks out of 30 marks for passing the clinical examination.</td>
<td>Scheme of practical: i)Clinical social case study : 10 marks ii)Problem solving epidemiological exercises: 10 marks iii)Statistical exercises 10 marks</td>
</tr>
<tr>
<td>Orals 10 marks</td>
<td>Orals 10 marks</td>
<td>Orals 10 marks</td>
</tr>
<tr>
<td>Internal assessment-20marks</td>
<td>Internal assessment- 20marks</td>
<td>Internal assessment- 40marks</td>
</tr>
</tbody>
</table>

Theory: 2 hrs duration
Ophthalmology
One paper -40marks
(Should contain one question on pre-clinical and para-clinical aspects, of 10 marks)

Theory: 2 hrs duration
E.N.T.
One paper -40marks
(Should contain one question on pre-clinical and para-clinical aspects, of 10 marks)

Theory: 3 hrs duration
SPM-1 60marks
SPM-2 60marks
(20 marks includes problem solving, applied aspects of management at primary level including essential drugs, occupational/agro based diseases, rehabilitation and social aspects of community.)

ENT& Ophthalmology
1. One structured question: 10 marks
2. 5 short answer type questions 5 x4 = 20 marks
3. 5 brief answer type questions 5 x 2 = 10 marks
Total = 40 marks

Community medicine(S.P.M.) have 2 papers of 60 marks each
Each paper has 2 sections & each section consists of
1. One structured question 10 marks
2. Five short answer questions 5 x 4 20 marks
Total 30 marks
## Scheme of Third Professional Part – II Examination

(Clinical subjects: Medicine, Surgery, Obstetrics & Gynecology and Pediatrics)

Conducted at the end of the 9th semester.

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Surgery</th>
<th>Obstetrics &amp; Gynecology</th>
<th>Pediatrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheme of practical:</td>
<td>Scheme of practical:</td>
<td>Scheme of practical:</td>
<td>Scheme of practical:</td>
</tr>
<tr>
<td>i) Long case: 50 marks ii) Short case: 30 marks iii) Spotters: 20 marks</td>
<td>i. One long case of 30 minutes - 50 marks ii. Short case 1 - 25 marks iii. Short ortho case 3 - 25 marks 10 minutes each &amp; The short cases should contain brief notes.</td>
<td>i. Obstetrics-1 case - 25 marks ii. Gynaecology-1 case - 25 marks Total - 50 marks (A detailed case sheet to be written. The marks distribution of case History taking - 5 Examination - 10 Discussion - 10)</td>
<td>Note: 25% of the marks are allotted for Orthopedic cases.</td>
</tr>
<tr>
<td>The candidate should write detailed case sheet for the long case</td>
<td>Total -100 marks Note: 25% of the marks are allotted for Orthopedic cases.</td>
<td>Total - 100 marks</td>
<td></td>
</tr>
<tr>
<td>Total 100 marks</td>
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</table>

<table>
<thead>
<tr>
<th>Orals</th>
<th>Orals</th>
<th>Orals</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 marks</td>
<td>20 marks</td>
<td>10 marks</td>
</tr>
<tr>
<td>i) Discussion - 10 marks ii) Instruments, ECG, X-Ray etc. - 10 marks</td>
<td>i. Record (of at least 10 delivery cases) -10 marks ii. Gynaec &amp; Family Planning -10 marks iii. Obstetrics-10marks (Note: In obstetrics pelvis and Foetal skull – 5 marks Specimens &amp; instruments – 5 marks)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal assessment</th>
<th>Internal assessment</th>
<th>Internal assessment</th>
<th>Internal assessment</th>
</tr>
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<tbody>
<tr>
<td>-60 marks</td>
<td>-60 marks</td>
<td>-40 marks</td>
<td>-20 marks</td>
</tr>
<tr>
<td>Theory: 3hrs duration</td>
<td>Medicine-1 60 marks</td>
<td>Medicine-2 40 marks</td>
<td>Theory: 3hrs duration</td>
</tr>
<tr>
<td>Surgery-1 60 marks</td>
<td>Surgery-2 60 marks</td>
<td>Gyn &amp; Obst -1 40 marks</td>
<td>Surgery-1 60 marks</td>
</tr>
<tr>
<td>Gyn &amp; Obst -2 40 marks</td>
<td>Theory: 2hrs duration</td>
<td>Pediatrics</td>
<td>One paper -40 marks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medicine &amp; Surgery each have 2 papers of 60 marks each with 2 sections</th>
<th>Time</th>
<th>Medicine &amp; Surgery each have 2 papers of 60 marks each with 2 sections Time</th>
<th>Medicine &amp; Surgery each have 2 papers of 60 marks each with 2 sections Time</th>
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<tbody>
<tr>
<td>each section consists of:</td>
<td>3 hours</td>
<td>3 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>1. One structured question</td>
<td>10 marks</td>
<td>1. One structured question:</td>
<td>10 marks</td>
</tr>
<tr>
<td>2. Three short answer questions 3 x 4</td>
<td>12 marks</td>
<td>2. Five short answer type questions 5 x 4 = 20 marks</td>
<td>2. Five short answer type questions 5 x 4 = 20 marks</td>
</tr>
<tr>
<td>3. Four brief answer type questions 4 x 2 = 8 marks</td>
<td>8 marks</td>
<td>3. Five brief answer type questions 5 x 2 = 10 marks</td>
<td>3. Five brief answer type questions 5 x 2 = 10 marks</td>
</tr>
<tr>
<td>Total</td>
<td>30 marks</td>
<td>Total</td>
<td>40 marks</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Gynecology &amp; Obstetrics has 2 papers of 40 marks each</th>
<th>Time</th>
<th>Pediatrics has one Paper of 40 marks and consists of:</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>each section consists of:</td>
<td>2 hours</td>
<td>Time</td>
<td>2 hours</td>
</tr>
<tr>
<td>1. One structured question</td>
<td>10 marks</td>
<td>1. One structured question:</td>
<td>10 marks</td>
</tr>
<tr>
<td>2. Five short answer type questions 5 x 4 = 20 marks</td>
<td>20 marks</td>
<td>2. Five short answer type questions 5 x 4 = 20 marks</td>
<td>2. Five short answer type questions 5 x 4 = 20 marks</td>
</tr>
<tr>
<td>3. Five brief answer type questions 5 x 2 = 10 marks</td>
<td>10 marks</td>
<td>3. Five brief answer type questions 5 x 2 = 10 marks</td>
<td>3. Five brief answer type questions 5 x 2 = 10 marks</td>
</tr>
<tr>
<td>Total</td>
<td>40 marks</td>
<td>Total</td>
<td>40 marks</td>
</tr>
</tbody>
</table>
1. Write are ketone bodies? How are they synthesized? Name the conditions characterized by excessive production of ketone bodiews. Explain the metabolic derangements and consequences of ketosis.

2. What are the metabolic fates of glucose –6- phosphate? Explain HMP shunt pathway and mention its significance.

WRITE SHORT NOTES ON:

3. what is competitive inhibition ? Write its clinical applications.

4. High energy compounds.

5. Porphyrias.

6. Biochemical functions and deficiency manifestations of Folic acid

7. Calorific value.

WRITE BROEF NOTES ON:

8. Essential fatty acids

9. Redox potential

10. Sources and deficiency manifestation of Vitamin ‘A’

11. Detoxification by Hydrolysis (two examples)

12. Composition and importance of Insulin
1ST MBBS DEGREE EXAMINATIONS  
BIOCHEMISTRY PAPER-II

Time: 2½ hours            Max.Marks:50

ANSWER ALL QUESTIONS

1. Name aromatic amino acids. Give an account on the metabolism of tyrosine. What are the biologically important compounds derived from tyrosine? Which are the inborn errors associated with this amino acid?  
   (1+6+1+2=10)

2. Give an account of the sources, absorption, requirement, functions and regulation of calcium.  
   (1+2+1+3+3 = 10)

WRITE SHORT NOTES ON:  
   (5 X 4 = 20)

3. induction and repression
4. Structure and function of TRNA
5. Respiratory and metabolic acidosis
6. Gout
7. Name four different types of nucleotides and mention their biological importance.

WRITE BROEF NOTES ON:  
   (5 X 2 = 10)

8. Tumor Markers
9. Structural features of cell membrane
10. Urea clearance
11. Define mutagens and give two examples
12. Hybridoma
1ST MBBS DEGREE EXAMINATIONS

PHYSIOLOGY PAPER-I

Time: 2½ hours Max. Marks: 50

ANSWER ALL QUESTIONS

1. Describe the blood groups and their significance; What is the importance of Rh factor?
   (8+2 = 10)

2. Draw a diagram to show the structure of the respiratory membrane and enumerate the haemodynamic factors influencing the exchange of gases across the membrane.
   (5+5 = 10)

WRITE SHORT NOTES ON:

3. Factors influencing coronary blood flow
4. Eccrine type of sweat gland
5. Name the different movements of the small intestines and mention their significance.
6. Juxta medullary nephron
7. P-R interval significance

WRITE SHORT NOTES ON:

8. Describe the thermal changes during muscle contraction.
9. Describe the functions of Bile
10. What is the Physiological importance of normal oncotic pressure of Plasma?
11. Artificial Respiration
12. Fick’s principle.
1ST MBBS DEGREE EXAMINATIONS

PHYSIOLOGY PAPER-II

Time: 2½ hours            Max. Marks: 50

ANSWER ALL QUESTIONS

1. Discuss the function of reticular formation.                 (10)

2. What is tetany? Describe one hormone which is the causative factor,  
   in detail.                                               (1+1+8=10)

(5+2+3 = 10)

WRITE SHORT NOTES ON:                                          (5 X 4 = 20)

3. Factors influencing spermatogenesis
4. Role of ADH in fluid balance of the body
5. Otolith organs
6. Functions of C.S.F.
7. Taste pathway

WRITE SHORT NOTES ON:                                          (5 X 2 = 20)

8. Myopia
9. Function of Glucagon
10. Saltatory conduction
11. Lower Motor Neurone Paralysis
1ST MBBS DEGREE EXAMINATIONS

ANATOMY PAPER-I

Time: 2½ hours        Max.Marks:50

ANSWER ALL QUESTIONS

1. Describe the gross features, Blood and Nerve Supply, Lymphatic drainage and development of Parotid gland.
   
   (4+3+1+2 = 10)

2. Describe the course, relations, branches and applied anatomy of ulnar nerve.
   
   (2+3+3+2 = 10)

SHORT ANSWER TYPE QUESTIONS (3 TO 7)


4. Middle meningeal artery

5. Lateral wall of the nose.

6. Quada Equina.

7. Caudate Nucleus.

BRIEF ANSWER TYPE QUESTIONS (8 TO 12)

8. Surgical neck of the humerus.


10. Insula.

11. Sensory decussation.

1ST MBBS DEGREE EXAMINATIONS

ANATOMY PAPER-II

Time: 2½ hours        Max.Marks:50

ANSWER ALL QUESTIONS

1. Describe external, internal features, Blood supply and development of Right atrium. (3+3+1+3 = 10)

2. Describe the gross anatomy, relations, interior, Blood and Nerve Supply and development of urinary bladder. (2+2+2+2+2 = 10)

SHORT ANSWER TYPE QUESTIONS (3 TO 7) (5 X 4 = 20)

3. Gall bladder.
4. Portal vein
5. Hila of the lungs.
6. Microscopic anatomy of stomach fundus.
7. Adductor canal.

BRIEF ANSWER TYPE QUESTIONS (8 TO 12) (5 X 2 = 10)

8. Dorsalis paedis artery
9. Saphenous opening
10. Sex chromosomes
11. Periosteum
2nd MBBS DEGREE EXAMINATIONS

PHARMACOLOGY PAPER-I

Time: 2 hours         Max.Marks: 40

1. Classify antihypertensive drugs. Write the pharmacological actions, uses and adverse effects of Ramipril.

   (10)

WRITE SHORT NOTES ON:

   (5x4 = 20)

2. Newer antiepileptic drugs
3. Drugs used in glaucoma
4. Pharmacokinetic drug interactions
5. Treatment of Morphine poisoning.
6. Use of $\alpha$-adrenergic blockers.

WRITE BRIEFLY ON:

   (5x2 = 10)

7. What is drug synergism? Give two examples
8. Two drugs used sublingually and two advantages of sublingual route.
9. Two contraindications for the use of Atropine. Explain the rationale.
10. Two uses and two adverse effects of Hydrochlorothiazide.
11. Write two drugs inducing parkinsonism and two drugs used in drug induced parkinsonism.
1. Enlist Hypoglycemic agents. Write the mechanism of action, pharmacological actions and adverse effects of any one oral hypoglycemic agent. 

Write Short notes on:. 

2. Adverse effects and therapeutic uses of Metronidazole.
3. Fluconazole
4. Anticancer antibiotics
5. Mechanism of action and uses of Heparin
6. Antitussives.

Write briefly on : 

7. Two drugs useful in acid peptic disease. Give reasons for their use.
8. Mechanism of action and one use of Methyl ergometrine.
9. Two advantage of loratidine over Diphenhydramine
10. Rationale of combination of two drugs in Cotrimoxazole, write one use.
11. Deferiprone – Mechanism of action and one use.
2nd MBBS DEGREE EXAMINATIONS
MICROBIOLOGY PAPER-I
(Bacteriology and Immunology)

Time: 2 hours         Max.Marks:40

1. Classify hypersensitivity reactions with examples. (5+5=10)
   Describe type I hypersensitivity.

   Write Short notes on: (5x4 = 20)

2. Complement
3. Lab diagnosis of Helicobacter infection.
4. Pathogenesis of autoimmune diseases
5. compare Exotoxins and Endotoxins
6. Types of bacteriological Media

   Write Briefly on (5x2 = 10)

7. Adjuvants.
8. Rapid plasma Reagin (RPR) test
9. Acinetobacter
10. Prophylaxis of whooping cough
11. Plague.
1. List the intestinal amoebae. Describe the pathogenicity and life cycle of E. histolytica. 

(2+3+5 = 10)

2. Prophylaxis of Polio-myelitis
3. Cryptosporidium
4. Dimorphic fungi
5. General characters of viruses
6. Flaviviruses.

Write Short notes on: 

(5x4 = 20)

7. Morphology of Heamoflagellates
8. Penicilliosis
9. Hydatid cyst
10. Cell cultures for growing viruses
11. Eggs of Nematodes.
1. A male child presented with recurrent painful haemarthrosis and haematomas. History of bleeding in male relatives on the maternal side of the family was available. (10)
   a) What is the probable diagnosis?
   b) Describe the inheritance of the disease?
   c) Describe the lab. diagnosis of the disease?
   d) Mention the complications following the therapy?

Write Short notes on: (5x4 = 20)
2. Giant cells
4. Thromboembolism
5. Tumour markers
6. Pathogenesis of Sickle cell disease.

Write Briefly on (5x2 = 10)
7. Barr body
8. Shock lung
9. Lesions of Vit. A Deficiency
10. Juvenile chronic myeloid leukemia
11. Rhinosporidiosis
2nd MBBS DEGREE EXAMINATIONS
PATHOLOGY PAPER-II
(Systemic Pathology)

Time: 2 hours         Max.Marks:40

1. A 8 years old boy was admitted with malaise, fever, oliguria, cocoa-coloured urine 2 weeks after recovery from sore throat. On examination, he was found to have perio orbital oedema and moderate hypertension. (10)
   a) What is the probable diagnosis?
   b) Describe the aetio pathogenesis of the conditions?
   c) What is the morphology of the organ?

Write Short notes on:      (5X 4 = 20)

2. Bacterial endocarditis    
3. Carcinoma cervix         
4. Reed-Sternberg (R-S) cell
5. Malignant melanoma       
6. Bronchiectasis

Write Briefly on                                                 (5x2=10)

7. Phyllodes tumour         
8. Barrett oesophagus       
9. Pigment gall stones      
10. Brain abscess           
11. Tuberculous osteomyelitis.
1. Classify mechanical wounds. Describe briefly the various types of abrasions and their medico legal significance.  

   (10 Marks)  

Write short notes on:  

5 X 4 = 20  

2. Different types of strangulations.  

3. Causes of impotency in males.  

4. Chronic alcohol poisoning.  

5. Suspended Animation.  

6. Hallucinations.  

Write briefly on:  

5 X 2 = 10  

7. Cardiac Tamponade.  

8. Fat Embolism  

9. Infamous conduct  

10. Rule of nine  

11. Post mortem lividity.
1) How will you manage a 40 year old woman presenting with dysphagia (10)

Write Short notes on: (5x4 = 20)

2) Anatomy of nasal septum
3) Physiology of equilibrium
4) Symptoms of Meniere’s disease
5) Signs of Atrophic Rhinitis
6) Management of Otosclerosis

Write Briefly on: (5x2=10)

7) Symptomatology of ear disease
8) Vocal nodule
9) Universal neonatal hearing screening
10) Ludwig's angina
11) Myringotomy.
FINAL MBBS DEGREE EXAMINATIONS PART-I

OPHTHALMOLOGY QUESTIONS

Time: 2 hours         Max.Marks: 40

Answer All Questions

1) Etiology, signs, symptoms, diagnosis and treatment of hypopyon ulcer cornea.
   (10 marks)

   Write Short notes on: (5x4 = 20)
   2) Traumatic Cataract
   3) Contact lens
   4) Pilocarpine
   5) Primary Eye Care System
   6) Ptosis.

   Write Briefly on: (5x2=10)
   7) Blepharitin
   8) Coryn Bacterium Diphtheria.
   9) Papilloedema
   10) Keratic Precipitates
   11) Dacryo cystectomy.
FINAL MBBS PART-I EXAMINATION
SOCIAL & PREVENTIVE MEDICINE – PAPER -I
(Concepts, Social Sciences, Nutrition, Environmental Sanitation, Statistics and General Epidemiology)

Time: 3 hours         Max.Marks: 60

PART – A
30 Marks

1. List the Ecological Factors related to ‘Malnutrition’. Describe in detail the preventive and social measures against malnutrition at the community level. 10 Marks

Write Short Notes on (5x4=20)
2. Periodic Fluctuations in Disease Occurrence.
3. Physical Quality of Life Index (PQLI).
4. Anti-Rodent Measures
5. Doctor – Patient Relationship
6. Normal Distribution Curve

PART – B (30 Marks)

7. Describe in detail with suitable examples the different modes of intervention available for disease prevention. (10)

Write short notes on: 5 X 4= 20

8. Prevention and Control of ‘Air Pollution’.
9. Ice berg Phenomenon of Disease
10. Primordial Prevention of Disease
11. Effects of Noise Exposure
12. Non-Randomized Trials
FINAL MBBS PART-I EXAMINATION
SOCIAL & PREVENTIVE MEDICINE – PAPER -II
(Concepts, Social Sciences, Nutrition, Environmental Sanitation, Statistics and General Epidemiology)

Time: 3 hours         Max.Marks: 60

PART – A

1. Discuss in detail extent of problem, causes, epidemiological factors and prevention of blindness in India 10 Marks

Write Short Notes on (5x4=20)
2. Immediate Care of Newborn
3. Parameters of Malaria Surveillance.
4. Hazards of Obesity and their Prevention and Control
5. Highlights of Reproductive and Child Health (RCH) Programme

PART – B (30 Marks)


Write short notes on: 5 x 4 = 20
8. Domiciliary Midwifery Service
10. Job Description of Health Worker (Female)
11. Functions of Voluntary Health Agencies
12. Work of World Health Organization (W.H.O.)
FINAL MBBS PART – II EXAMINATION  
GENERAL MEDICINE PAPER-I  

PAPER – A (30 Marks)  
Time: 3 hours         Max. Marks: 60  
1. Discuss the clinical features, laboratory investigations and management of megaloblastic anaemia. (3+3+4=10)  
Write short notes on: 3 X 4 = 12 marks 
2. General principles in management of poisoning.  
3. Systemic Lupus Erythematosus  

Write briefly on: 4 X 2 = 8 marks  
5. Etiology of community acquired pneumonia  
6. Rheumatoid Arthritis  
7. Medical management of gout  
8. Disseminated intravascular coagulation.  

PART – B (30 marks)  
9. Discuss the clinical features, laboratory investigations and management of Thyrotoxicosis. (3+3+4=10)  
Write short notes on: 3 X 4 = 12 marks  
10. Liver function tests.  
11. Indications of dialysis  
12. Newer Insulin delivery devices  

Write briefly on: 4 X 2 = 8 marks  
13. Management of acute variceal bleeding  
14. Metformin  
15. Scabies  
16. Prokinetic drugs
PAPER – A (30 Marks)

1. Describe diagnostic criteria, clinical features, laboratory investigations and management of Acute Rheumatic fever. (2+2+2+4=10)

Write short notes on: 3 X 4 = 12 marks
2. Serum markers in acute myocardial infarction.
3. Complications of falciparum malaria
4. Target organ damage in hypertension

Write briefly on: 4 X 2 = 8 marks
5. Digitalis
6. Etiology and clinical presentation in leptospirosis
7. Fallots tetralogy
8. Cor pulmonale.

PART – B (30 marks)

9. Discuss the clinical features, laboratory investigations and management of Pyogenic meningitis. (3+3+4=10)

Write short notes on: 3 X 4 = 12 marks
10. Duchenne muscular dystrophy.
11. Treatment of multibacillary leprosy
12. Management of Status epilepticus

Write briefly on: 4 X 2 = 8 marks
13. Trigeminal neuralgia
14. Paranoid schizophrenia
15. Tropical pulmonary eosinophilia
16. Thiamine deficiency
1. Describe five important nutritional causes of growth retardation. Describe the treatment of nutritional rickets. 10 Marks

Write short notes on: (5 X 4 = 20)

2. Life threatening complications of Acute Post Streptococcal glomerulonephrits.
4. Classification of congenital cyanotic heart diseases.
5. Genetic basis of Down’s Syndrome
6. Investigations for suspected neonatal hypothyroidism.

Write Brief answers on: (5 X 2 = 10)

7. Four causes of delayed closure of fontanelle
10. Side effects of steroid therapy.
FINAL MBBS PART – II EXAMINATION

SURGERY – PAPER - I

Time: 2 hours         Max.Marks: 40

PART – A (30 marks)

1. Enumerate the various blood products. Discuss the indications, complications and their treatment following blood transfusion. 10 marks

Write Short Notes on (3x4=12)
2. Hidradenitis Suppurativa
3. Thiersch Graft
4. Ludwig’s Angina

Write Brief answers on (4x2=8)
5. Preauricular sinus
6. Epidermoid cyst
7. Cold abscess
8. Breslow’s staging

PART – B (Orthopaedics –30 marks)

9. Classify fracture neck of femur. Write down the management of fracture neck of femur in an adult and its possible complication. 10 marks

Write short notes on: 3 X 4 =12
10. Volkman Ischaemic contracture
11. Brodies’ abscess
12. Autonomic bladder

Write briefly on: 4 x 2=8
13. Achondroplasia
14. Mallet finger
15. Foot drop
16. Unicameral bone cyst
FINAL MBBS PART – II EXAMINATION

SURGERY – PAPER - II

Time: 2 hours         Max.Marks: 40

PART – A (30 marks)

1. Define goiter. How would you classify goiter. Describe the symptoms, signs, investigations and treatment of multinodular goiter. 10 marks

   Write Short Notes on       (3x4=12)
   2. Hypertrophic pyloric stenosis
   3. Fine Needle Aspiration Cytology
   4. Pseudocyst of pancreas

   Write Brief answers on       (4x2=8)
   5. Lymphatic drainage of stomach
   6. Desmoid tumour
   7. Buschke – Lowenstein tumour
   8. Pantaloon hernia

PART – B (Orthopaedics –30 marks)

9. Discuss the classification, clinical features, staging and management of testicular tumours. 10 marks

   Write short notes on:       3 X 4 =12
   10. Barrett’s esophagus
   11. Mesenteric cyst
   12. Solitary nodule thyroid.

   Write briefly on:       4 x 2=8
   13. Hesselbach’s triangle
   14. Extradural haemorrhage
   15. Varicocele
   16. Porto-systemic anastomosis
Answer all questions:

1. What are the symptoms, signs and how do you manage a case of Ruptured Ecotopic Pregnancy? (2+3+5=10)
   
   Write Short Answers: 5 x 4=20

2. Missed abortion
3. Hydramnios
4. Gestational Diabetes.
5. Management of postpartum Haemorrhage
6. Outlet forceps.

   Write Brief answers on 5x 2=10

7. Convalescent uterus
8. Macafee's Regime in placenta praevia.
9. Complications drugs caesarean section
10. Pritchard’s Regime in eclampsia
Answer all questions:

1. What are the causes of leucorrhoea? Describe the clinical features, diagnosis and management of Trichomonal Vaginitis. (1+3+3+4=10)

Write Short Answers: 5x4=20

2. Usages of progestogens in gynaecology
3. Menorrhagia
4. Chocolate Cyst of the Ovary
5. Dilatation and Curettage

Write Short Answers: 5x4=20

7. Rectovaginal – Fistula
8. Dysmenorrhea
9. Staging of Cancer Cervix
10. Cervical Biopsy
11. Cryptomenorrhea
# BACHELOR OF MEDICINE & BACHELOR OF SURGERY (M.B.B.S.)

## SYLLABUS

<table>
<thead>
<tr>
<th>A. 1&lt;sup&gt;st&lt;/sup&gt; PROFESSIONAL</th>
<th>Hours</th>
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<tbody>
<tr>
<td>1. Foundation course – Stage– I</td>
<td></td>
</tr>
<tr>
<td>2. Community Medicine</td>
<td>60</td>
</tr>
<tr>
<td>3. Anatomy</td>
<td>650</td>
</tr>
<tr>
<td>4. Biochemistry</td>
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<td>5. Physiology</td>
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<th>B. 2&lt;sup&gt;nd&lt;/sup&gt; PROFESSIONAL</th>
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<tbody>
<tr>
<td>1. Foundation course – Stage– II</td>
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<tr>
<td>2. Pathology</td>
<td>300</td>
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<tr>
<td>3. Microbiology</td>
<td>250</td>
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<td>4. Pharmacology</td>
<td>300</td>
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<tr>
<td>5. Forensic Medicine</td>
<td>100</td>
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<tr>
<td>6. Community Medicine</td>
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<table>
<thead>
<tr>
<th>C. 3&lt;sup&gt;rd&lt;/sup&gt; PROFESSIONAL PART-I</th>
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<tbody>
<tr>
<td>1. Otorhinolaryngology</td>
<td>70</td>
</tr>
<tr>
<td>2. Ophthalmology</td>
<td>100</td>
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<tr>
<td>3. Community Medicine</td>
<td>50</td>
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</table>

<table>
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<tr>
<th>D. 3&lt;sup&gt;rd&lt;/sup&gt; PROFESSIONAL PART-II</th>
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<tbody>
<tr>
<td>1. General Medicine and allied subjects</td>
<td>400</td>
</tr>
<tr>
<td>(General Medicine 300Hrs. Pulmonary Medicine 20 Hrs., Psychiatry 20 Hrs., Skin and STD 30 Hrs., Radiology 20 Hrs. &amp; Dentistry 10 Hrs. )</td>
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</tr>
<tr>
<td>2. Pediatrics</td>
<td>100</td>
</tr>
<tr>
<td>3. General Surgery &amp; Orthopedics and allied subjects</td>
<td>420</td>
</tr>
<tr>
<td>(General Surgery 300Hrs. Orthopedics 100 Hrs., Anaesthesia Including emergency medicine 20 Hrs. )</td>
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<tr>
<td>4. Obstetrics &amp; Gynecology</td>
<td>300</td>
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</tbody>
</table>
1) FOUNDATION COURSE – STAGE– I
2) COMMUNITY MEDICINE
3) ANATOMY
4) BIOCHEMISTRY
5) PHYSIOLOGY
1) FOUNDATION COURSE – STAGE– I

The main purpose of foundation course at this stage is to help the learners in adjusting to the new environment in a medical college and develop skills for learning, so as to cope up with a vast curriculum. Many students who pursued rote learning in secondary/higher secondary education find it difficult to cope up with new subjects. Besides students coming from diverse backgrounds in terms of culture and language barriers, should be helped to settle down properly. It is also necessary to sensitize students with interpersonal and communication skills, besides the role of information and communication technology (ICT).

The topics suggested for foundation course at this stage are:

1. Study Skills, learning Techniques, use of Computers and information retrieval including use of internet.
3. Behavioral skills, group dynamics.
4. Stress management and coping skills.
5. Introduction to ethics, professional etiquettes.
6. Psychosocial issues and introduction to health economics.

Teaching Learning Methods

The foundation course, at this stage, may be organized for a week involving faculty from anatomy, Physiology, Biochemistry, Community Medicine, Behavioral ad Social Scientists and expert in library science and informatics.

The methods may include:

1. Structured interactive sessions
2. Case studies and simulated cases and triggers
3. Role play/Role Models
4. Video Clippings

Assessment

Assessment may be conducted in the form of programme evaluation and feedback from the participants at the end of the programme. It is strongly recommended that the concepts learned during the foundation course should be reinforced throughout the course and assessed in the final examination, in the respective discipline.
2) COMMUNITY MEDICINE

Total hours for teaching and training in community Medicine are 60.

I. Lectures / Demonstrations / Seminars / Group Discussions :(30 hours)
   
   The following topics to be covered:
   1) Concept of community Medicine
   2) National Health Policy and health for all as National Goal
   3) Demography
   4) Health Economics
   5) Medical Sociology
   6) Hospital Management
   7) Behavior Science
   8) Psychology

II. Practical / Field visits :(30 hours)
   1) Visit to PHC for 1 day
   2) Visit to Sub-center and Village – 1 day
   3) Visit to U.H.C. and other Health Care Providers (ICDS) – 1 day
   4) Visit to Hospitals - 1 day

NOTE :

1) The teaching and training in community medicine shall be arranged by the department of community medicine in consultation with pre-clinical departments at institutional level.
2) The attendance of the students in the community medicine shall be added to the attendance in subject of Anatomy, for sending the students for the examination.
3) HUMAN ANATOMY

(i) Goal : 
The broad goal of teaching anatomy to undergraduate students aims at providing comprehensive knowledge of the gross and microscopic structure and development of human body to provide basis for understanding the clinical correlation of organs or structures involved and the anatomical basis for the disease presentations.

(ii) Objectives:
A. Knowledge:
   At the end of the course the student shall be able to
   a) Comprehend the normal disposition, clinically relevant interrelationships, functional and cross sectional anatomy of the various structures in the body;
   b) Identify the microscopic structure and correlate elementary ultrastructure of various organs and tissues and correlate the structure with the functions as a prerequisite for understanding the altered state in various disease processes;
   c) Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functions of the organs and systems. Locate the site of gross lesions according to the defects encountered;
   d) Demonstrate knowledge of the basic principles and sequential development of the organs and systems, recognise the critical stages of the development and the effects of common teratogens, genetic mutations and environmental hazards. Understand the developmental basis of the major variations and abnormalities.

B. Skills :
   At the end of the course the student shall be able to:
   a) Identify and locate all the structures of the body and mark the topography of the living anatomy;
   b) Identify the organs and tissues under the microscope;
   c) Understand the principles of karyotyping and identify the gross congenital anomalies;
   d) Understand principles of newer imaging techniques and interpretation of Computerised Tomography (CT) Scan, sonogram etc.
   e) Understand clinical basis of some common clinical procedures i.e. intramuscular and intravenous injection, lumbar puncture kidney biopsy etc.
C. Integration:

Integrated teaching of basis sciences with reference to clinical medicine.

An integrated teaching programs on Ethics and personality development has to be included to improve students discipline & Capabilities.

Topics for integrated teaching:

a) Femoral Sheath – femoral Hernia  
b) Lymphatic drainage of Lower Limb  
c) Inguinal Hernia  
d) Ischio-rectal fossa  
e) Extra Hepatic biliary apparatus  
f) Porto-systemic Anastomoses  
g) Diameters of the pelvis and its applied Anatomy  
h) Supports of Uterus  
i) Thyroid Gland  
j) Mammary Gland  
k) Fascial Spaces of Hand  
l) Coronary Arteries  
m) Stomach: Histological structure & functions of Gastric glands, Mechanism of secretion, gastric function tests – Hyperchlorhydia, Achorhydia.  
n) Kidney: Structure of Nephron, functions of Nephron and Renal function tests.  
o) Liver: Structure of Liver, formation and functions of Bile and Liver function tests.  
p) Thyroid Gland – Structure; Synthesis and Metabolism of Thyroid Hormones and Thyroid function tests.  
q) Adrenal gland: related disorders, structure, synthesis of Adrenal, Medullary hormones and their functions.

Note:--

1. A minimum of Five topics each, covering 2 hours are to be taught in a year. The Vice- principal(Academic) of the institution will be the co-ordenator for the integrated teaching programme.
2. Common topics suggested by Academic Senate (13 to 17), 2001 for integrated teaching in Biochemistry, Anatomy and Physiology:

Total (650) 1/3 didactic lecturer
### (iii) Syllabus of Anatomy

#### Distribution of theory hours

<table>
<thead>
<tr>
<th>No</th>
<th>Topics</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Descriptive Anatomy</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>General Anatomy</td>
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</tr>
<tr>
<td>4</td>
<td>Embryology</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>a) General Embryology (12)</td>
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</tr>
<tr>
<td></td>
<td>b) Systemic Embryology (30)</td>
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</tr>
<tr>
<td></td>
<td>i. Muscle, bone, skin, appendages and development of mammary gland</td>
<td>2</td>
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<tr>
<td></td>
<td>ii. Cardio-Vascular system including heart</td>
<td>6</td>
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<tr>
<td></td>
<td>iii. Lymphatic system</td>
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<tr>
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<td>iv. Brachial Arches and Pouches</td>
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</tr>
<tr>
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<td>v. Gastro intestinal system and associated glands</td>
<td>6</td>
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<td></td>
<td>vi. Development of face, palate &amp; teeth</td>
<td>3</td>
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<tr>
<td></td>
<td>vii. Respiratory System</td>
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<td></td>
<td>viii. Genito Urinary system</td>
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<tr>
<td>5</td>
<td>Histology</td>
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<td>c) General Histology (10)</td>
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<td>d) Systemic Histology (20)</td>
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<td>6</td>
<td>Neuro Anatomy</td>
<td>20</td>
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<tr>
<td>7</td>
<td>Human Genetics</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>a) Introduction</td>
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<tr>
<td></td>
<td>b) Mitosis and Meiosis</td>
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<tr>
<td></td>
<td>c) Normal Chromosomal pattern</td>
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<td></td>
<td>d) Mutation</td>
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<tr>
<td></td>
<td>e) Culture of Chromosomes (Karyotyping)</td>
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<tr>
<td></td>
<td>f) Abnormalities of Chromosomes (Numerical &amp; structure)</td>
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<td></td>
<td>g) Linkage</td>
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</tr>
<tr>
<td></td>
<td>h) Blood groups</td>
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**Total:** 109

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**LECTURE DEMONSTRATIONS / GROUP DISCUSSIONS / TUTORIALS / SEMINARS**

<table>
<thead>
<tr>
<th>No</th>
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<td>5</td>
<td>5</td>
<td>10</td>
<td>15</td>
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<tr>
<td>6</td>
<td>A maximum of two seminars of two hours duration for each semester.</td>
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<td>8</td>
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</table>

**Total:** 128
IV) Practical should aim at familiarising student with Introduction:

Gross Anatomy of the whole body with more stress on location, position, surface anatomy and important relations of the various organs and other structures. Each student has to dissect whole human body ignoring minor details, which are not important clinically, and stressing more on applied aspect.

**Distribution of Anatomy Practicals**

<table>
<thead>
<tr>
<th>Dissection (Each practical class is of 2 hours duration</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>No. of practical</td>
<td></td>
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<tr>
<td>1 Upper Extremity</td>
<td>25</td>
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<tr>
<td>2 Lower Extremity</td>
<td>25</td>
</tr>
<tr>
<td>3 Thorax</td>
<td>18</td>
</tr>
<tr>
<td>4 Head &amp; Neck</td>
<td>45</td>
</tr>
<tr>
<td>5 Abdomen &amp; Pelvis</td>
<td>44</td>
</tr>
<tr>
<td>6 Brain and spinal cord</td>
<td>25</td>
</tr>
</tbody>
</table>

Histology (Each practical class is of 2 hours duration 35 X 2 = 70)

- General Histology: 12 hours (24)
- Systemic Histology: 23 hours (46)

**Genetics**

- Practicals in Genetics: 3 hours (6)

**List of Histology Slides - General**

<table>
<thead>
<tr>
<th>Slides</th>
<th>Hours</th>
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<tbody>
<tr>
<td>1 Squamous Epithelium</td>
<td>15</td>
</tr>
<tr>
<td>2 Cuboidal Epithelium</td>
<td>16</td>
</tr>
<tr>
<td>3 Columnar Epithelium</td>
<td>17</td>
</tr>
<tr>
<td>4 Pseudo stratified Epithelium</td>
<td>18</td>
</tr>
<tr>
<td>5 Ciliated Columnar Epithelium</td>
<td>19</td>
</tr>
<tr>
<td>6 Ureter (Compound Epithelium)</td>
<td>20</td>
</tr>
<tr>
<td>7 Oesophagus (Compound Epithelium)</td>
<td>21</td>
</tr>
<tr>
<td>8 Skin (Compound Epithelium)</td>
<td>22</td>
</tr>
<tr>
<td>9 areolar connective tissue</td>
<td>23</td>
</tr>
<tr>
<td>10 Adipose tissue</td>
<td>24</td>
</tr>
<tr>
<td>11 Hyaline Cartilage</td>
<td>25</td>
</tr>
<tr>
<td>12 White fibre cartilage</td>
<td>26</td>
</tr>
<tr>
<td>13 Elastic Cartilage</td>
<td>27</td>
</tr>
<tr>
<td>14 Bone -TS</td>
<td></td>
</tr>
</tbody>
</table>

**List of Histology Slides - Systemic**

<table>
<thead>
<tr>
<th>Slides</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Trachea</td>
<td>13</td>
</tr>
<tr>
<td>2 Lung</td>
<td>14</td>
</tr>
<tr>
<td>3 Serous Salivary Gland</td>
<td>15</td>
</tr>
<tr>
<td>4 Mucous Salivary Gland</td>
<td>16</td>
</tr>
<tr>
<td>5 Mixed Salivary Gland</td>
<td>17</td>
</tr>
<tr>
<td>6 Tongue</td>
<td>18</td>
</tr>
<tr>
<td>7 Tooth</td>
<td>19</td>
</tr>
<tr>
<td>8 Esophagus</td>
<td>20</td>
</tr>
<tr>
<td>9 Stomach – Fundus</td>
<td>21</td>
</tr>
<tr>
<td>10 Stomach – Pylorus</td>
<td>22</td>
</tr>
<tr>
<td>11 Duodenum</td>
<td>23</td>
</tr>
<tr>
<td>12 Jejunum</td>
<td>24</td>
</tr>
</tbody>
</table>

50
Practicals in Genetics
(Karyotyping of normal male & female and some genetic disorders and photographs)

1. Male Karyotyping
2. Female Karyotyping
3. Down’s Syndrome
4. Turner’s Syndrome
5. Klinefelter’s Syndrome
6. Super Female

Demarcation of Syllabus for University Exam between Paper I & Paper II

PAPER-I Portions:
- Upper Extremity
- Head and Neck
- Brain and Spinal cord
- General Histology
- General Embryology
- Systemic Embryology, concerned with Head & Neck and Brain.

PAPER-II Portions:
- Lower Extremity
- Thorax, Abdomen, Pelvis
- Systemic Histology and Embryology
- Concerned with Thorax, Abdomen & Pelvis
- Genetics
- General Anatomy.

Books Recommended:
1. Textbook of Anatomy by T.S. Ranganathan
2. Embryology
   - Langmann’s Embryology
   - IB Sing Embryology
3. Histology
4. Dissection Manuals
   - Cunningham’s Dissection manuals I, II & III
5. Gross Anatomy text book by A.K. Datta (3 vols) and text book by Inderbir Singh (3 vols)
6. Neuro Anatomy
   - Clinical Neuro Anatomy
   - by Vishnam Singh, I.B. Singh
   - Reference Book – A.K. Datta’s Neuro Anatomy
   - Text book

Reference Books:
1. Gray’s Anatomy.
2. Embryology by Hamilton & Mossman.
4) BIOCHEMISTRY

Syllabus of Biochemistry including Molecular Biology

(i) Goal:

The broad goal of the teaching of Biochemistry to undergraduate students is to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of the acquired, in solving clinical problems.

(ii) Objectives:

A. Knowledge:

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

a) describe the molecular and functional organization of a cell and list its subcellular components;
b) delineate structure, function and inter-relationship of biomolecules and consequences of deviation from normal;
c) summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered;
d) describe digestion and assimilation of nutrients and consequences of malnutrition;
e) integrate the various aspects of metabolism and their regulatory pathways;
f) explain the biochemical basis of inherited disorders with their associate sequelae;
g) describe mechanisms involved in maintenance of body fluid and pH homeostasis;
h) outline the molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application of medicine;
i) summarize molecular concept of body defences and their application in medicine;
 j) outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis;
k) familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation; analysis and interpretation of a given data;
l) suggest experiments to support theoretical concepts and clinical diagnosis;

B. SKILLS:

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

a) make use of conventional techniques/instruments to perform biochemical analysis relevant to clinical screening and diagnosis;
b) analyze and interpret investigative data;
C) demonstrate the skills of solving scientific and clinical problems and decision making;

C. INTEGRATION:

The knowledge acquired in biochemistry shall help the students to integrate molecular events with structure and function of the human body in health and disease.
### Syllabus Of Biochemistry

**Total hours 240**

**Theory:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
<th>No. of Hours</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction to biochemistry</td>
<td>1</td>
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<tr>
<td>2.</td>
<td>Cell- Molecular &amp; functional organisation</td>
<td>2</td>
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<tr>
<td>3.</td>
<td>Chemistry of Carbohydrates:</td>
<td>5</td>
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<tr>
<td></td>
<td>a) Classification of Carbohydrates:</td>
<td></td>
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<tr>
<td></td>
<td>b) Structural and functional aspects of Mono-saccharides, Disaccharides, Homo and Hetero Polysaccharides</td>
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<td>4.</td>
<td>Chemistry of Lipids:</td>
<td>4</td>
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<tr>
<td></td>
<td>a) Classification</td>
<td></td>
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<tr>
<td></td>
<td>b) Structural and functional aspects of simple, compound and Derived lipids including saturated, unsaturated and Essential Fatty aids.</td>
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<tr>
<td>5.</td>
<td>Chemistry of Proteins:</td>
<td>8</td>
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<tr>
<td></td>
<td>a) Classification &amp; functional aspects.</td>
<td></td>
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<tr>
<td></td>
<td>b) Electrophoretic separation of proteins</td>
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<tr>
<td></td>
<td>c) Classification and Properties of amino aids</td>
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<td></td>
<td>d) Separation of Amino acids by Chromatography</td>
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<td></td>
<td>e) Outlines of elucidation of Protein Structure.</td>
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<td>f) Biologically active Peptides</td>
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<tr>
<td>6.</td>
<td>Nucleic Acids:</td>
<td>4</td>
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<tr>
<td></td>
<td>a) Bases, nucleotides, Nucleic acids, (structural and functional aspects)</td>
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<tr>
<td></td>
<td>b) synthetic nucleotides</td>
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<td>7.</td>
<td>Enzymes</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>a) Classification</td>
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</tr>
<tr>
<td></td>
<td>b) Mechanism of Enzyme action</td>
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<tr>
<td></td>
<td>c) Enzyme kinetics</td>
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<td>d) Factors affecting enzyme activity</td>
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<td></td>
<td>e) Isoenzymes</td>
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<td></td>
<td>f) Coenzymes</td>
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<td></td>
<td>g) Enzyme Inhibition</td>
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<td></td>
<td>h) Cellular &amp; Plasma enzymes</td>
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<tr>
<td></td>
<td>i) Diagnostic importance of Enzymes</td>
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<td></td>
<td>j) Regulation of Enzyme activity</td>
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<td>8.</td>
<td>Biological Oxidation:</td>
<td>4</td>
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<tr>
<td></td>
<td>a) Bioenergetics</td>
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<tr>
<td></td>
<td>b) Exergonic &amp; Endergonic reaction</td>
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<td></td>
<td>c) Oxidases</td>
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<td></td>
<td>d) Electron Transport Chain</td>
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<td></td>
<td>e) Oxidative Phosphorylation</td>
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<td></td>
<td>f) High energy Compounds</td>
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<tr>
<td></td>
<td>g) Low Energy Compounds</td>
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</tr>
<tr>
<td>9.</td>
<td>Vitamins:</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>a) Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Structure, Sources, Daily requirement,</td>
<td></td>
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<tr>
<td></td>
<td>Physiological role and deficiency disorders of Fat soluble vitamins – A, D, E, &amp; K and water soluble vitamins-B. complex group and Vit. C.</td>
<td></td>
</tr>
</tbody>
</table>
10. Carbohydrate Metabolism:
   a) Digestion
   b) Absorption
   c) Metabolism of Glucose
      i) Entry of Glucose into Cells
      ii) Glycolysis
      iii) Rapaport – Leubering Cycle
      iv) Pyruvate Dehydrogenase Complex
      v) Citric Acid Cycle
      vi) Gluconeogenesis
      vii) Glycogenesis
      viii) Glycogenolysis
      ix) Glycogen Storage Diseases
      x) Hexose Mono Phosphate Shunt Pathway
     xi) Uronic Acid Pathway
    xii) Metabolism of Galactose & Fructose
     xiii) Blood Glucose Homeostasis, Glucose Tolerance Test, Diabetes Mellitus and Hypoglycemia

11. Metabolism of Proteins:
   a) Protein Digestion & Absorption
   b) General Pathways of metabolism including
   c) Transamination & Deamination and Ammonia transport
   d) Urea Cycle
   e) Metabolism of individual amino acids & Molecular disorders.
   f) Creatine & Creatinine

12. Metabolism of Nucleic Acids:
   a) Outlines of Metabolism of Purines & Pyrimidines & Metabolic disorders
   b) DNA replication and transcription
   c) Protein Biosynthesis (Translation)
   d) Regulation of Gene Expression
   e) Outlines of Genetic Engineering

13. Lipid Metabolism:
   a) Digestion & Absorption
   b) Plasma Lipids
   c) Mobilisation of Fats from adipose tissue
   d) Oxidation of Fatty acids
   e) Biosynthesis of Fatty acids
   f) Metabolism of Phospholipids and triacylglycerols
   g) Metabolism of Ketone bodics
   h) Metabolism of Cholesterol
   i) Lipo Proteins – Metabolism and Disorders
   j) Lipotropic factors
   k) Chemistry and metabolism of Prostaglandins.

14. Hemoglobin structure, Functions and Metabolism,
    Porphyrias and Hemoglobinopathies Catabolism of home

15. Integration of Metabolism
    Metabolic integration; liver, adipose tissue, Skeletal Muscle and Brain
16. Mineral Metabolism  
Sodium, Potassium, Calcium, Phosphorus, Magnesium, Manganese, Sulphur, Iron, Copper, Zinc, Iodine, Cobalt, Fluorine, Selenium and chromium.

17. Nutrition:  
a) Calorific Value  
b) Specific Dynamic Action  
c) Energy Requirements  
d) Balance Diet, Nitrogen balance, Dietary fiber  
e) Foodfads  
f) Nutritional disorders kwashiorkor and marasmus

18. Detoxification:

19. Hormones:  
i) General Principles of Hormonal action  
ii) Outline of Hormone Structure  
iii) Mechanism of Action and metabolic roles of  
a) Pituitary  
b) Pancreas  
c) Adrenal  
d) Gonadal  
e) Thyroid

20. Functional Tests:  
a) Renal  
b) Hepatic  
c) Pancreatic  
d) Gastric

21. Fluid- Electrolyte and Acid - Base Balance

22. Plasma Proteins & Immunoglobulins

23. Biological Membrane

24. Carcinogenesis Malignancy and cell cycle

Division of syllabus for university exam

PAPER-I  
1. Enzymes  
2. Biological Oxidation  
3. Digestion and absorption  
4. Detoxification  
5. Carbohydrate Chemistry and Metabolism  
6. Vitamins  
7. Nutrition  
8. Lipid Chemistry and Metabolism  
9. Hemoglobin Structure, functions & metabolism, Porphyrias and Hemoglobinopathies  

PAPER-II  
1. Protein Chemistry and Metabolism  
2. Mineral metabolism  
3. Nucleic acid chemistry and metabolism  
4. Genetics  
5. Hormones  
6. Functional tests  
7. Plasma Proteins and Immunoglobulins  
8. Biological membranes  
9. Carcinogens  
10. Acid-base balance and water – Electrolyte balance

55
PRACTICALS IN BIOCHEMISTRY: 40 Hrs.

A. Qualitative:
1. Reactions of Carbohydrates
   a) Glucose & Fructose
   b) lactose, Maltose and sucrose
   c) Identification of Carbohydrates
   No.of Practicals
2. Reactions of Proteins:
   a) Precipitation reactions
   b) General colour reactions of Proteins and
   c) Albumin and above a&b
   d) Casein
   e) Gelatin and peptone
   f) Identification
   No.of Practicals
3. Normal Constituents of Urine
   No.of Practicals
4. Abnormal Constituents of Urine
   Identification of Abnormal Constituents of urine
   No.of Practicals

B. Quantitative:
1. Blood glucose
2. Blood Urea
3. S. Proteins
4. Urinary Creatinine
5. CSF Analysis
   a) Proteins (I) Sulphosalicylic acid test (ii) Pandy’s test
   b) Glucose
   c) Chlorides
   No.of Practicals

C. Demonstrations:
1. Chromatography
2. Electrophoresis
3. GTT
4. S. Uric acid estimation
5. S. Bilirubin estimation

Revision and conduct of Tests = 5 Practicals 20 Hrs.
Tutorials and group discussions = 10 Practicals 50 Hrs.

NOTE: Each Practical Carries two hours.
**RECOMMENDED BOOKS**

1. *Review of Biochemistry* by Harper
2. *Biochemistry* by Debajyoti Das
5. **Medical Biochemistry by Dinesh Puri**

**REFERENCE BOOKS**

<table>
<thead>
<tr>
<th>1. Biochemistry</th>
<th>Lehninger</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Biochemistry</td>
<td>Stryer</td>
</tr>
<tr>
<td>3. Text Book of Clinical Biochemistry</td>
<td>Tietz</td>
</tr>
<tr>
<td>4. Clinical Biochemistry</td>
<td>Varley</td>
</tr>
</tbody>
</table>
(5) HUMAN PHYSIOLOGY INCLUDING BIO-PHYSICS

(i) Goal:

The broad goal of teaching Physiology to undergraduate students aims at providing the student a comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the Physiological basis of health and disease.

(ii) Objectives:

(a) KNOWLEDGE:
At the end of the course, the student shall be able to:

1. Explain the normal functioning of all the organ systems and their interactions for well coordinated total body function.
2. Assess the relative contribution of each organ system to the maintenance of the milieu interior
3. Elucidate the Physiological aspects of normal growth and development
4. Describe the Physiological reasons and adaptations to environmental stresses.
5. List the Physiological principles underlying pathogenesis and treatment of disease.

(b) SKILLS:
At the end of the course, the student shall be able to

1. Conduct experiments designed for study of Physiological phenomena;
2. Interpret experimental / investigative data
3. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

(c) INTEGRATION:
At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

1) Source and functions of Reticulo-endothelial system;
2) Structure and sequence of events at Neuro-muscular junctions, Neuro-muscular blocking drugs and clinical disorders pertaining to Neuro-muscular junctions;
3) Structure of Gastric glands, composition and functions of gastric juice. Regulation of gastric, secretion Cytoprotection and peptiulcer;
4) Gastro-intestinal hormones – Source of production, structure and functions;
5) Blood pressure – Structure of Blood Vessels – Neural regulation, Hormonal regulation;
6) Anatomical location of Respiratory centers – Neural & chemical regulation of respiration;
7) Microcirculation-Structure – Mechanism of filtration and regulation of Microcirculation;
8) Counter-current Multiplier and exchange system – functions – clinical importance;
9) Thyroid gland – structure, synthesis – Metabolism of Thyroid hormones – Actions of Thyroid hormones – Disorders of Thyroid glands;
10) Pituitary gland – histological structure – Hormones of Anterior pituitary;
11) Ovary – Structure, endocrinial regulation – Structure and mechanism of female sex hormones and contraception;
12) Histology of cerebral cortex, Neural circuits and their importance;

BIOPHYSICS
(i) GOAL AND OBJECTIVES:
The broad goal of teaching Bio physics to undergraduate students is that they should understand basic physical principles involved in the functioning of body organs in normal and diseased conditions.

Total time for teaching Biophysics - 5 hours
Out of which:
a. Didactic lectures - 3 hours
b. Tutorial/group discussion - 1 hour
c. Practical - 1 hour

(ii) Topic distribution:
a. Didactic lectures:
   (i) Physical principles of transport across cell membranes and across capillary wall.
   (ii) Biopotentials
   (iii) Physical principles governing flow of blood in heart and blood vessels.
        Also physical principles governing flow of air in air passages.

b. Tutorial/group discussion: On the topics covered in didactic lectures.

c. Practicals:
   Demonstration of:
   (i) Bio potential on oscilloscope
   (ii) Electro Encephalogram (E.E.G)
   (iii) Electro Myelogram (E.M.G)
   (iv) Electro Cardiogram (E.C.G)

iii) Theory Syllabus (Physiology):

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the Unit</th>
<th>No.of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General Physiology</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Cell Physiology Muscle &amp; Nerves</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Blood, Body fluids &amp; RES</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>Cardiovascular System</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Respiratory &amp; Environmental Physiology</td>
<td>18</td>
</tr>
</tbody>
</table>

Total 480 Hrs.
Division of syllabus paperwise:

**PAPER I**
Cell, Blood, Biophysics, CVS, Respiration, Digestion, Excretion, Regulation of body temperature, Body fluids and RES.

**PAPER II**
Endocrines, reproduction, Muscle and Nerve, CNS, ANS and Special senses.

iv) Practicals in Physiology:

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the Unit</th>
<th>No. of practicals</th>
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</thead>
<tbody>
<tr>
<td>a. Human Practicals:</td>
<td></td>
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</tr>
<tr>
<td>1.</td>
<td>Introduction – Use of Microscope and Laboratory Protocol</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>R.B.C.Count</td>
<td>1</td>
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<tr>
<td>3.</td>
<td>Total Leucocyte Count</td>
<td>1</td>
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<tr>
<td>4.</td>
<td>Bleeding Time &amp; Clotting Time</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Blood Groups</td>
<td>1</td>
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<tr>
<td>6.</td>
<td>E.S.R.</td>
<td>1</td>
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<tr>
<td>7.</td>
<td>Estimation of Hemoglobin</td>
<td>1</td>
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<tr>
<td>8.</td>
<td>Hematological Indices</td>
<td>1</td>
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<tr>
<td>9.</td>
<td>Recording of Pulse &amp; Blood Pressure</td>
<td>1</td>
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<tr>
<td>10.</td>
<td>Effect of Posture &amp; Exercise on Blood Pressure</td>
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<td>11.</td>
<td>Lung Function Tests – Spirometry &amp; PEF</td>
<td>1</td>
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<tr>
<td>12.</td>
<td>Clinical Examination of Cardiovascular System</td>
<td>1</td>
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<tr>
<td>13.</td>
<td>Clinical Examination of Respiratory System</td>
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<td>14.</td>
<td>Clinical Examination of Sensory Nervous System</td>
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<td>15.</td>
<td>Clinical Examination of Motor Nervous System</td>
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<tr>
<td>16.</td>
<td>Clinical Examination of Cranial Nerve Functions</td>
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<tr>
<td>17.</td>
<td>Reflexes</td>
<td>1</td>
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<tr>
<td>18.</td>
<td>Tests for Hearing-Rinne’s &amp; Weber’s Tests</td>
<td>1</td>
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<tr>
<td>19.</td>
<td>Acuity of vision &amp; Tests for colour vision</td>
<td>1</td>
</tr>
<tr>
<td>20.</td>
<td>Platelet Count</td>
<td>1</td>
</tr>
<tr>
<td>21.</td>
<td>Reticulocyte Count</td>
<td>1</td>
</tr>
</tbody>
</table>

b. Amphibian practical demonstrations & Interpretation of Graphs & Charts

1. Recording of simple Muscle Twitch                      | 1                 |
2. Effect of Two successive stimuli of Muscle contraction  | 1                 |
3. Effect of Fatigue on Muscle-Nerve preparation           | 1                 |
4. Effect of Increasing strength of stimuli on Muscle contraction | 1                |
5. Genesis of Tetanus  
6. Effect of Temperature variation of Muscle contraction  
7. Effect of After load and Free load on Muscle twitch  
8. Determination of velocity of Nerve conduction  
9. Recording of normal Cardiogram  
10. Effect of Temperature variation on Heart beat  
11. Refraction period on beating Heart  
12. Properties of Cardiac Muscle-Stannius Legature, Summation, All-or-None Law, Treppe  
13. Effect of Vagosympathetic Stimulation on Frog’s Heart  
14. Effect of Ions & Drugs on perfused frog’s heart  

c. General Demonstrations  
1. E.C.G.  
2. Pregnancy test  
3. E.M.G.  
4. Perimetry  
5. Ophthalmoscope  
6. E.E.G.  
7. Mosso’s ergography  
8. Bicycle ergography  
9. Treadmill  
10. Pulmonary function tests  
11. Applied Physiology 30 x 2 = 60  
12. Tutorial and group discussions 60 x 2 = 120  

Total no. of hours for practicals : 135 x 2 = 270  

Recommended Text Books.  
2. Concise Med. Physiology – Chaodhari  
4. Understanding physiology III Edn. – Bijilani  

Practical Books:  
1. Practical Physiology – C.L.Ghai  

Reference books:  
3. Anatomy & Physiology – Tora – Tora  
BACHELOR OF MEDICINE & BACHELOR OF SURGERY (M.B.B.S.)

SYLLABUS FOR 2nd PROFESSIONAL

1) FOUNDATION COURSE STAGE – II
2) PATHOLOGY
3) MICROBIOLOGY
4) PHARMACOLOGY
5) FORENSIC MEDICINE
SYLLABUS FOR 2nd PROFESSIONAL

1) FOUNDATION COURSE STAGE – II
   At this stage, the learners come into clinical contact for the first time. At the same time they need to pursue studies in the para clinical and clinical disciplines. The purpose of the foundation course, at this stage, should be to sensitize the learners to the basic principles of the following in an ethical manner.

   The topics suggested are:
   1. Art and science of history taking
   2. Art and science of general physical examination.
   3. Communication and behavioral skills.
   4. Professional etiquettes and ethics.
   5. Professionalism and ethical issues to be reinforced.
   6. Prescription writing.
   7. Sensitization to rational use of drugs, laboratory practice.

   The teaching learning methods are:
   1. Interactive lectures
   2. Demonstration, Triggers
   3. Case vignettes
   4. Role play and role modeling

   The course, at this stage, should involve Medicine as a lead department with support from other departments. A behavioral scientist, faculty from Community Medicine and representatives from other departments should be associated.

Assessment

   Assessment should be conducted in the form of programme evaluation and feedback at the end of course. As indicated earlier, all aspects covered in this foundation course, should be duly assessed. Due weightage should be given for assessing all knowledge and skills in the final assessment in their respective discipline.
2) 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 mechanisms and cause of disease in order to enable him/her to achieve complete understanding of the natural history and clinical manifestations of disease.

(ii) OBJECTIVES:

(a) KNOWLEDGE:

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

1) Describe the structure and ultrastructure 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 processes which govern the maintenance of homeostasis, mechanisms of their disturbance and the morphological and curricular manifestations associated with it;

3) Describe the mechanisms and patterns to tissue response to injury such that he/she can appreciate the pathophysiology of disease process and their curricular manifestations;

4) Correlate normal and altered morphology (gross and microscopic) of different organ systems in common disease 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 rationale and principles of technical procedures of the diagnostic laboratory tests and interpretation of the results.

2) Perform the simple bedside tests on blood, urine and other biological fluid sample.

3) Draw a rational scheme of investigations aimed at diagnosing and managing the cases of common disorders;

4) Understand biochemical/physiological disturbances that occur as a result of disease in collaboration with pre-clinical department.

(c) INTEGRATION:

At the end of training he/she shall be able to integrate the causes of disease and relationship of different ethological factors (social, economic and environmental) that contribute to the natural history of diseases most prevalent in India.
### PATHOLOGY SYLLABUS

#### i) Theory

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
<th>No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL PATHOLOGY:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Cellular injury &amp; Cellular death</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Cellular growth &amp; differentiation normal regulation and adaptation</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Inflammation &amp; Repair</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>Haemodynamic disorders, Thrombosis &amp; shock</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>Genetic Disorders: Sex Chromatin, Turner's, Klinefelter's, Down's</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Diseases of Immunity including: S. L. E., Amyloidosis</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>Neoplasia</td>
<td>6</td>
</tr>
<tr>
<td>9.</td>
<td>Vitamins and Nutritional Disorders</td>
<td></td>
</tr>
</tbody>
</table>

#### HAEMOTOLOGY:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
<th>No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Anemias</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Bleeding disorders</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Leukemias</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>Plasma cell disorders</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Lymph nodes and spleen</td>
<td>3</td>
</tr>
</tbody>
</table>

#### SYSTEMIC PATHOLOGY:

**DISORDERS OF THE BLOOD VESSELS** 4

- a) Atherosclerosis
- b) Aneurysms
- c) Tumors
- d) Hypertension – Integrated teaching

#### CVS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pericardial diseases</td>
</tr>
<tr>
<td>2.</td>
<td>Ischaemic heart diseases</td>
</tr>
<tr>
<td>3.</td>
<td>Rheumatic heart disease – Integrated teaching</td>
</tr>
<tr>
<td>4.</td>
<td>Infective endocarditis</td>
</tr>
<tr>
<td>5.</td>
<td>Myocardial diseases</td>
</tr>
<tr>
<td>6.</td>
<td>Congenital heart diseases</td>
</tr>
</tbody>
</table>
### RESPIRATORY DISEASES
1. **COPD**
2. Pulmonary infections and Lung abscess
3. Pneumoconiosis
4. ARDS (Adult Respiratory Distress Syndrome)
5. Tumors
6. Diseases of the Pleura

### DISEASES OF THE G.I.T
1. **Salivary Gland diseases**
   a) Tumors b) Inflammatory conditions
2. Disease of the oral cavity and Esophagus
3. Stomach
   a) Gastritis b) Peptic Ulcers – Integrated teaching
   c) Tumors integrated teaching
4. Intestines
   a) I.B.D b) Mal absorption syndromes c) Tumors

### DISEASES OF THE LIVER AND BILIARY TACT
1. **Cirrhosis**
2. Hepatitis – Integrated teaching
3. Tumors of Liver
4. Tumors of Gall bladder
5. Inflammatory diseases of Gall bladder
6. Gall stones

### DISEASES OF PANCREAS
1. **Pancreatitis**
2. Tumors
3. Diabetes Mellitus – Integrated teaching

### KIDNEY & LOWER UNIVARY TRACT
1. Cystic conditions of Kidney
2. Glomerular diseases
3. Tubular diseases
4. Nephrotic Syndrome – Integrated teaching
5. Pyelonephritis
6. Renal stones
7. Tumors of the Kidney
8. Inflammatory conditions and tumors of the bladder

### MALE GENITAL TRACT
Inflammatory conditions & Neoplastic lesions involving Penis, Testis & Prostate

### FEMALE GENITAL TRACT
1. **Cervicitis**
2. Carcinoma cervix – Integrated teaching
3. Dysfunctional uterine bleeding
4. Ovarian tumors
5. Trophoblastic tumors
DISEASES OF THE BREAST

Inflammatory conditions & Neoplasms

ENDOCRINE DISORDERS

1. Thyroid disorder
   a) Hyper Thyroid b) Thyroiditis c) Goiters d) Tumors
2. Para-thyroid disorder
3. Pituitary gland disorders
4. Adrenal glands disorders
   a) Disorders of hypertension b) Tumors and infections

DISORDERS OF THE SKIN

1

DISORDERS OF THE BONES, JOINTS & MUSCLES

4

DISORDERS OF THE CENTRAL & PERIPHERAL NERVOUS SYSTEM

a) Inflammatory b) neoplastic lesions

ii) TOPICS FOR INTEGRATED TEACHING:

1. Hypertention
2. Myocardial infarction
3. Peptic Ulcer
4. Diabetic mellitus
5. Nephrotic syndrome
6. Carcinoma cervix
7. Carcinoma stomach
8. Leprosy
9. Hepatitis
10. AIDS

iii) DIVISION OF SYLLABUS PAPERWISE:

   PAPER I : General Pathology including Haematology
   PAPER II : Systemic Pathology.
### HAEMOTOLOGY

<table>
<thead>
<tr>
<th>Topics</th>
<th>No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Estimation of HB:</td>
<td>1</td>
</tr>
<tr>
<td>a) Demonstration</td>
<td></td>
</tr>
<tr>
<td>b) Conduction of Practicals with Basic standard questionnaire &amp; model disease charts for interpretation</td>
<td>1</td>
</tr>
<tr>
<td>2. RBC &amp; WBC counts:</td>
<td>1</td>
</tr>
<tr>
<td>a) Demonstration</td>
<td></td>
</tr>
<tr>
<td>b) Conduction of Practicals with Basic standard questionnaire &amp; model disease charts for interpretation</td>
<td>1</td>
</tr>
<tr>
<td>3. Hematocrit &amp; ESR:</td>
<td>1</td>
</tr>
<tr>
<td>a) Demonstration</td>
<td></td>
</tr>
<tr>
<td>b) Basic standard questionnaire &amp; model disease charts for interpretation</td>
<td>1</td>
</tr>
<tr>
<td>4. Peripheral smear:</td>
<td>1</td>
</tr>
<tr>
<td>a) Techniques of smear making &amp; staining with demonstration</td>
<td></td>
</tr>
<tr>
<td>b) Identification of cells - demonstration</td>
<td>1</td>
</tr>
<tr>
<td>c) Model disease charts for interpretation</td>
<td>1</td>
</tr>
<tr>
<td>d) Practicals:</td>
<td></td>
</tr>
<tr>
<td>i) Smears of Microcytic Hypochromic &amp; Macrocytic Anaemia &amp; Haemolytic Anaemias</td>
<td>1</td>
</tr>
<tr>
<td>ii) Smears of CLL</td>
<td>1</td>
</tr>
<tr>
<td>Smears of CML</td>
<td>1</td>
</tr>
<tr>
<td>Smears of Acute Leukemia: AML or ALL</td>
<td>1</td>
</tr>
<tr>
<td>iii) Eosinophilia</td>
<td>1</td>
</tr>
<tr>
<td>All the above with basic standard Questionnaire</td>
<td></td>
</tr>
<tr>
<td>5. Bleeding Time, Clotting Time &amp; Platelet Demonstration</td>
<td>1</td>
</tr>
<tr>
<td>6. Reticulocyte count Demonstration with basic standard Questionnaire</td>
<td>1</td>
</tr>
<tr>
<td>7. Bone marrow Examination</td>
<td></td>
</tr>
<tr>
<td>a) Methods of collection and demonstration</td>
<td>1</td>
</tr>
<tr>
<td>b) Study of normal marrow</td>
<td>1</td>
</tr>
<tr>
<td>c) Study of 2 abnormal bone marrows</td>
<td>1</td>
</tr>
<tr>
<td>8. Blood groups &amp; related things</td>
<td>1</td>
</tr>
</tbody>
</table>

### EXAMINATION OF URINE

<table>
<thead>
<tr>
<th>Topics</th>
<th>No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physical characters &amp; different samples with pH &amp; Sp gravity Demonstration</td>
<td>1</td>
</tr>
<tr>
<td>2. Chemistry of Urine with Albumin, Blood, Sugar, Ketone bodies, Bile salts &amp; pigments Demonstration with discussion about errors in interpretation</td>
<td>1</td>
</tr>
<tr>
<td>3. Practical Tests for students:</td>
<td>1</td>
</tr>
<tr>
<td>a) Albumin + Blood Physical properties &amp; Clinical correlation</td>
<td></td>
</tr>
<tr>
<td>b) Sugar + Ketone bodies Physical properties &amp; Clinical correlation</td>
<td>1</td>
</tr>
<tr>
<td>a &amp; b with case charts for interpretation</td>
<td></td>
</tr>
</tbody>
</table>
4. Microscopy:
   a) Casts, crystals, RBC, Puscells Demonstration 1
   b) Case charts for interpretation 1
5. Pregnancy Test: Demonstration, discussion of normal & Molar pregnancies & Choriocarcinoma 1

EXAMINATION OF BODY FLUIDS

1. Demonstration of CSF, Plueral fluid, Ascitic fluid & Sputum – Normal Inflammation and malignancy 1
2. Exfoliative Cytology :
   a) Techniques 1
   b) Demonstration of PAP, H & E of Cervical smears and Bronchial Wash 1
   c) 3 disease samples with discussion & Clinical correlation 1
3. FNAC
   a) Techniques Demonstration 1
   b) inflammatory & Neoplastic cases for discussion & Interpretation 1
4. Sex Chromatin demonstration- Buccal smear interpretation

EXAMINATION OF AUTOPSY

Techniques of Autopsy and Autopsy demonstration & recording of 4 diseases 4

INSTRUMENTS 3

1. RBC & WBC pipettes & diluting fluids
2. Neubauer chamber & Others
3. PCV Tube
4. ESR Tube
5. Hb Meter
6. Urino meter
7. Esbach’s albumino meter
8. L.P. Needle
9. Bone marrow aspiration needles (Salah and Klima)
10. Cuvette of an autoanalyser

GROSSING OF SPECIMENS

5 Practical demonstration classes for 5 groups (min 30 specimens) 5 hours

INTEGRATE TEACHING

Topics as given by the University in the regulations of MBBS degree course - 20 hrs
**HISTOPATHOLOGY**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Histopathology Lab – Practical demonstration of steps involved</td>
<td>1</td>
</tr>
<tr>
<td>2. Staining Techniques, H&amp;E Special stains:</td>
<td>2</td>
</tr>
<tr>
<td>- PAS, Vangieson, Sudan (Fat), Iron</td>
<td></td>
</tr>
<tr>
<td>3. Preparation of Requisition for Pathology Lab</td>
<td>1</td>
</tr>
<tr>
<td>- fixatives</td>
<td></td>
</tr>
<tr>
<td>- Clinical details Specific points regarding the lesion</td>
<td></td>
</tr>
<tr>
<td>4. Slides: Any 44 of the following with at least 16 from General Pathology</td>
<td>40</td>
</tr>
</tbody>
</table>

**General Pathology slides**

<table>
<thead>
<tr>
<th>Slide Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Cloudy swelling</td>
</tr>
<tr>
<td>2) Fatty change</td>
</tr>
<tr>
<td>3) Hyaline change</td>
</tr>
<tr>
<td>4) Coagulation and caseous Necrosis</td>
</tr>
<tr>
<td>5) Cells of Acute &amp; Chronic inflammation</td>
</tr>
<tr>
<td>6) Granulation tissue</td>
</tr>
<tr>
<td>7) CVC Lung &amp; Liver</td>
</tr>
<tr>
<td>8) Thrombus</td>
</tr>
<tr>
<td>9) Amyloidosis (Spleen)</td>
</tr>
<tr>
<td>10) Rhinosporidiosis</td>
</tr>
<tr>
<td>11) Actinomycosis</td>
</tr>
<tr>
<td>12) Mycetoma</td>
</tr>
<tr>
<td>13) Filarial Lymph node</td>
</tr>
<tr>
<td>14) Leprosy</td>
</tr>
<tr>
<td>15) Squamous papilloma, adenoma</td>
</tr>
<tr>
<td>16) Lipoma, fibroma</td>
</tr>
<tr>
<td>17) Capillary &amp; Cavernous angioma</td>
</tr>
<tr>
<td>18) Cellular features of malignancy</td>
</tr>
<tr>
<td>19) Squamous cell Ca. &amp; adeno Ca.</td>
</tr>
<tr>
<td>20) Fibrosarcoma</td>
</tr>
</tbody>
</table>
Systemic Pathology slides

1. Blood Vessels & Heart
   a. Atherosclerosis
   b. Monckeberg’s arteriosclerosis
   c. Hyaline arteriolsclerosis
   d. TAO
   e. Aschoff’s body
   f. Myocardial infarction

6. Lymphonodes
   a. Hodgkin’s lymphoma
   b. Non-Hodgkin’s Lymphoma
   c. TB Lymph node

7. Salivary glands:
   Pleomorphic adenoma

8. Liver
   a. Cirrhosis
   b. Hepatoma

9. GIT
   a. Chronic Gastric ulcer
   b. Carcinoma stomach & colon
   c. Carcinoid appendix

2. Respiratory system
   a. Emphysema
   b. Bronchiectasis
   c. Lobar & Bronchopneumonias
   d. Pulmonary tuberculosis
   e. Carcinoma Lung

10. Testis & FGT
   a. Seminoma
   b. Endomtrium Proliferative Secretory
   c. Leomyoma
   d. Dermoid Cyst
   e. Vesicular mole

3. Kidney
   a. Chronic Glomerulonephritis
   b. Chronic Pyelonephritis
   c. Benign Nephrosclerosis
   d. Wilm’s Tumor
   e. Renal Cell carcinoma

   a. Fibroadenoma
   b. Duct cell carcinoma

5. Thyroid
   a. Hashimoto’s Thyroiditis
   b. Grave’s disease
   c. Follicular adenoma
   d. Papillary Carcinoma

11. Skin
   a. Basal cell carcinoma
   b. Melanoma

12. Musculo Skeletal
   a. Osteomyelitis
   b. Osteo sarcoma
   c. Chondro sarcoma
   d. Giant cell tumor
   e. Ewing’s sarcoma

GROUP DISCUSSIONS
PRACTICAL - ORIENTED & THEORY- ORIENTED

-78 Hours
(with standard basic questionnaire) (14+64)
Topics:
7 x 2 : 14

a) Collection of blood, methods & anticoagulants
b) Anaemias
c) Haemorrhagic disorders
d) Leukemias & Lymphomas
e) Blood groups & Transfusion reactions
f) Urine changes _ Physical & Chemical Characters with clinical correlation
Discussion of Jaundice
g) Body fluids sampling (collection) preservation Techniques, variability in disease  

h) Topics of certain common disorders in general and systemic pathology in the form of questionnaire and Group discussion - 32 topics excluding topics covered in integrated teaching.

i) HIV  

Each topic not more than 2 Hours.

**INTERNAL ASSESSMENT**  
- 12 hours

a. Three(3) Theory examinations of 2 hours each  
b. One (1) Practical examination in divided batches together 6 hours.

**NUMBER OF CLASSES (HOURS)**

<table>
<thead>
<tr>
<th>Class Type</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Theory</td>
<td>113</td>
</tr>
<tr>
<td>2. Practicals</td>
<td>77</td>
</tr>
<tr>
<td>(Haematology-20, Urine-7, Fluids-6, Histopathology-44)</td>
<td></td>
</tr>
<tr>
<td>3. Instruments</td>
<td>3</td>
</tr>
<tr>
<td>4. Grossing of specimens</td>
<td>5</td>
</tr>
<tr>
<td>5. Group discussion (Practical &amp; Theory Oriented topics)</td>
<td>78</td>
</tr>
<tr>
<td>6. Autopsy</td>
<td>4</td>
</tr>
<tr>
<td>7. Integrated Teaching</td>
<td>20</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>300 Hours</strong></td>
</tr>
</tbody>
</table>

**BOOKS RECOMMENDED**:  
1. Robbins Text Book of Pathology. *  
2. Robbins Pathologic Basis of Disease by cotran, Kumar of Robbins—6th/latest  

**REFERENCE BOOKS**:  
2. Anderson’s Pathology Vol I & II 10th ed  
SYLLABUS FOR 2nd PROFESSIONAL

(3) MICROBIOLOGY:

(i) Goal:
The broad goal of the teaching of undergraduate students in Microbiology is to provide an understanding of the natural history of infectious disease in order to deal with the etiology pathogenesis, laboratory diagnosis, treatment and control of infections in the community.

(ii) Objectives:
(a) KNOWLEDGE:
   At the end of the course, the student shall be able to:
   1) State the infective micro-organisms of the human body and describe the host parasite relationship;
   2) List pathogenic micro-organisms (bacteria, viruses, parasites, fungi) and describe the pathogenesis of the diseases produced by them;
   3) State indicate the modes of transmission of pathogenic and opportunistic organisms and their sources including insect vectors responsible for transmission of infection;
   4) Describe the mechanisms of immunity to infections;
   5) Acquire knowledge on suitable antimicrobial agents for treatment of infections and scope of immunotherapy and different vaccines available for prevention of communicable diseases;
   6) Apply methods of disinfections and sterilization to control and prevent hospital and community acquired infections.
   7) Recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.

(b) SKILLS:
   At the end of the course, the student shall be able to:
   (1) plan and interpret laboratory investigation for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agent;
   (2) identify the common infectious agents with the help of laboratory procedures and use antimicrobial sensitivity tests to select suitable antimicrobial agents;
   (3) perform commonly employed bed-side tests for detection of infectious agents such as blood film for malaria, filaria, Gram staining and Acid Fast Bacilli(ABF) staining and stool sample for ova cyst etc.,
   (4) use the correct method of collection, storage and transport of clinical material for microbiological investigations.
(C) INTEGRATION:
The student shall understand infectious diseases of national importance in relation to the clinical, therapeutic and preventive aspects.

2) SYLLABUS OF MICROBIOLOGY :

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the unit (Lectures)</th>
<th>No.of.Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>General Bacteriology</td>
<td>8</td>
</tr>
<tr>
<td>2.</td>
<td>Immunology</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Parasitology</td>
<td>20</td>
</tr>
<tr>
<td>4.</td>
<td>Systemic Bacteriology</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
<td>General Virology AND Systemic Virology</td>
<td>15</td>
</tr>
<tr>
<td>6.</td>
<td>Mycology</td>
<td>6</td>
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<tr>
<td></td>
<td><strong>Total No. of Hours</strong></td>
<td><strong>94</strong></td>
</tr>
</tbody>
</table>

TEACHING HOURS CAN BE DIVIDED AS FOLLOWS :

| 1.      | Lectures                                         | 94          |
| 2.      | Practicals                                       | 50          |
| 3.      | Demonstrations                                   | 50          |
| 4.      | Symposia & Seminars                              | 40          |
| 5.      | Internal assessment                              | 16          |
|         | **Grand Total**                                  | **250**     |

NOTE : THE DETAILED SYLLABUS IS VIDE ANNEXURE (A)

2) Syllabus of Microbiology :

i) BROAD AREAS OF STUDY

a. General bacteriology : Those aspects of general bacteriology which help the student to understand the bacterial pathogenesis, diagnosis, treatment, prevention and control’ should be must know’ category.
   1. Introduction to microbes and methods of studying them.
   2. Source and spread of microbes and infection control and containment including principles and use of antimicrobial agents
   3. The pathogenic mechanisms of microbes and pathogenesis of infectious diseases.

b. Immunology : The basic principles of immunity and immunological phenomenon which help to understand the pathogenesis, laboratory diagnosis and control of infectious diseases and non-infectious diseases should be ‘must know’ category.
   - The immune system and host’s response to infection.

c. Systematic microbiology

d. Prevention of infectious diseases

e. Infections and diseases of various systems of the body.
ii) DETAILED SYLLABUS

Chapter 1: Introduction to Microbes and Methods of studying them:

Theory:
Objectives: At the end of the chapter, the student should be able to

a. Describe the unique properties of unicellular organism prokaryote, and viruses in contrast with those of eukaryotes
b. State the rationale of classifying microbes into bacteria, fungi, parasites and viruses.
c. Recall the growth requirements of microbes
d. Use microscopes, media, wire loops, staining procedures & similar equipment and processes
e. The nature of bacteria: morphology
f. Growth requirements of bacteria (includes the study of media); metabolism and genetics
g. Nomenclature and classification of microorganisms
h. Microscopy-types and their principles
i. The biology of Protozoa
j. The nature and properties of viruses, Bacteriophage
k. The laboratory methods of cultivating viruses
l. The nature of fungi: basic structure and classification
m. Growth requirements of fungi

Practical:
Objectives: At the end of the chapter, the student shall be able to

a. Identify various morphological forms of bacteria, fungi, viruses and parasites that cause human infections.
b. Perform simple, differential staining and other techniques to demonstrate micro-organisms and also to interpret their results.
c. To identify common laboratory methods used for cultivation and identification of microbes.

Practical exercises:

a. Introduction of media; smear making; simple and differential stains; other basic techniques to demonstrate micro-organism and microscopy
b. The microscope; the morphology of micro-organisms. Bacteria:
c. Cell cultures, cytopathic effect; haemagglutination by viruses; inclusion bodies; animal inoculation.
Chapter 2: The Source and Spread of Microbes

Theory:
Objectives: At the end of the chapter, the student will be able to

a. define the terms: reservoir, source, exposure, colonization, infection, diseases, vector, fomite, epidemiology, endemicity, epidemic, pandemic, epizootic, incidence, prevalence, zoonosis, attack rate, asepsis, antisepsis, sterilization, disinfections

b. list various routes of exposure to microbes

c. Routes of spread of infections; endogenous vs. exogenous; source and reservoir of infections

d. Sterilization, antisepsis, disinfection and asepsis

e. Hospital acquired infections

Practical objective: At the end of the chapter, the student shall be able to

a. observe the presence of microbes in our environments by studying settle plates

b. observe the presence of normal flora in nose, throat, etc.

c. interpret sterility tests done on various materials

d. sample appropriate clinical materials for tracing the source and spread of both community and hospital acquired infections.

e. Interpret the findings of various ‘surveillance’ procedures

Practical demonstrations:

a. Demonstration of the equipments and agents used in sterilization and disinfection.

b. Study of microbes in our environment by settle plates; effect of hand washing method

c. Study of normal flora of man by examining throat and nasal swabs and also by cough plate method

d. Visit to the Microbiology Laboratory and Central Sterilization and Supplies Department(CSSD)
Chapter 3: The pathogenic mechanisms of microbes and pathogenesis of infectious diseases

Theory:
Objectives: At the end of the chapter, the student shall be able to

a. enumerate the variety of interactions between microbes and humans, ranging from commensalism to pathogenesis

b. define words: saprophyte, commensal, carrier state, latency, chronic infection, virulence, opportunism, toxin, invasion, viraemia, bacteriaemia and sepsicaemia

c. Cite examples of different pathogenic mechanisms of bacterial, fungal, parasitic and viral illness

d. state the principles of quantitation of microbial dose in animal inoculation, such as minimum infectious dose, lethal dose and of neutralization

e. Host parasite interactions- mechanisms of microbial pathogenesis; infection; host response; virulence; toxigenicity

f. Pathogenesis of bacterial infections

g. Pathogenesis of parasitic infestations

h. Pathogenesis of viral infections

i. Pathogenesis of fungal infections

Practical:
Objective: At the end of the chapter, the student shall be able to demonstrate the virulence factors of microorganisms, using simple techniques

Practical demonstrations:

a. demonstration of capsule; coagulase test
b. demonstration of Elek’s test; experimental tetanus
c. case study: bacterial diseases viral diseases
Chapter 4: The immune system and host’s response to infection

Theory:
Objectives: At the end of the chapter the student shall be able to

a. describe the anatomy and physiology of primary and secondary lymphoid organs tissues and cells of immune system
b. describe the terms: natural resistance, immunity, antigen, epitope, hapten, antibody, immunoglobulin, local immunity, systemic immunity, cell mediated immunity, hypersensitivity, autoimmunity, memory and also correlate them with normal physiology and pathology;
c. describe with examples various types of antigen – antibody reactions in vitro and in vivo
d. enumerate the immune deficiency states and their causes
e. describe the tests used to measure the immune functions
f. state the principles of histocompatibility
g. anatomy of immune apparatus
h. Antigens; antigen presentation and cell cooperation in immunity
i. Immunoglobulins and their role in immunity
j. Antigen – Antibody reactions – 1
k. Antigen – Antibody reactions – 2
l. Cell mediated immunity and their role in immunity
m. Complement and its role in immunity
n. Hypersensitivity
o. Measuring immune functions
p. Autoimmunity
q. Immunodeficiency and tolerance
r. Transplantation immunology
s. Immunization
t. Tumour immunology

Practical:
Objectives: At the end of the session, the student shall be able to identify and interpret the results of the following tests:

a. Slide and tube agglutination, latex agglutination and coagglutination; indirect and reverse passive haemagglutination tests
b. Capillary and gel precipitation tests counter immunoelectrophoresis and radial immunodiffusion
c. Complement fixation test
d. ELISA test
e. Various skin tests

Practical:
a. Phagocytosis; opsonization
b. Immunoprecipitation tests
c. Agglutination test
d. Delayed hypersensitivity ; and tests for CMI
e. Rheumatoid factor, antinuclear antibody
Chapter 5: The Principles and methods of diagnosis of infections and infectious diseases and their treatment:

Theory:
Objectives: At the end of the chapter, the student shall be able to

a. List the diagnostic tests used for common and important infections and identify the specimens necessary for each
b. State the principles of isolating/culturing bacteria, viruses & fungi
c. Describe the principles of antigen detection methods
d. List various serological tests and state their principles, applications in diagnosis
e. Demonstrate various microbes / parasites / ova / cysts by direct microscopy
f. collection and transport of clinical samples; culture of microbes
g. Serological methods of diagnosis of bacterial infections
h. Serodiagnosis of fungal infections
i. Serodiagnosis of viral infections
j. Serodiagnosis of parasitic infections
k. Rapid diagnostic methods especially with reference to viruses

Practical:
Objective: At the end of the session, the student shall be able to perform and interpret the following techniques

a. Simple stains, Gram stain, Acid fast staining techniques; saline and iodine preparations for ova & cysts and also concentration methods; peripheral blood smear for parasites; lactophenol cotton blue & KOH preparations for fungi rapid diagnostic methods
b. Be able to collect appropriate clinical material for laboratory diagnosis
c. Be able to do preliminary processing of clinical materials

Practical demonstrations:

a. Demonstration of specimen container, collection of specimens, transport and media; preliminary processing in the laboratory
b. Demonstration of common methods used for demonstration of pathogenic microorganisms
c. Culture of bacteria, fungi, protozoa, viruses
d. Rapid diagnostic tests for various microorganisms
Chapter 6: Principles and uses of antimicrobial agents

Theory:
Objectives: At the end of the chapter, the student shall be able to

a. list antimicrobial agents and classify them as antibiotics and chemotherapeutic agents.

b. Define the terms: susceptibility, resistance and describe the mechanisms of transferable and nontransferable drug resistance

c. Describe the tests necessary to determine drug susceptibility, antibiotic concentration and serum bactericidal level

d. Antimicrobial resistance

e. Laboratory monitoring of antimicrobial therapy

Practical:
Objectives: At the end of the course, the student should be able to interpret the results of

a. Disc diffusion tests
b. MIC/MBC value, break – points, MIC 50, MIC 90, etc.
c. Assays for antimicrobial levels in body fluids

Practical demonstration:

a. Demonstration of antimicrobial susceptibility tests both diffusion and dilution tests
b. Demonstration of antimicrobial assay
Chapter 7: Systematic microbiology

Theory:

Objectives: At the end of chapter, the student shall be able to

a. State the basic taxonomy of common and important microorganisms
b. Recall the basic principles of identifying microbes
c. List the basic biological properties of common and important microbes
d. Describe the role of physician in initiating microbiological investigations

Bacteriology

a. Staphylococci
b. Streptococci
c. Neisseria
d. Corynebacteria
e. Mycobacteria
f. Bacillus
g. Clostridium
h. Actinomycetes
i. Haemopilus and Bordetella
j. Enterobacteriaceae
k. Vibrios and Campylobacter
l. Brucella, Francisella and Legionella
m. Pseudomonas and other non-fermenters
n. Spirochaetes – Treponema, Borrelia, Leptospira
o. Rickettsia
p. Chlamydia
q. Nonsporing anaerobic bacteria
r. Mycoplasma and L Forms

Mycology

a. Agents of very superficial mycoses
b. Agents of superficial mycoses; dermatophytoses
c. Agents of subcutaneous mycoses
d. Agents systemic mycoses
e. Opportunistic fungi, Mycotoxicosis.

Virology

RNA Viruses:-

a. Picorna viruses
b. Orthomyxo and Paramyxo
c. Rhabdo viruses
d. Arbo and Robo
e. Slow viruses
f. Retro viruses
g. Oncogenic viruses
h. Viruses causing gastroenteritis
i. Hapatitis viruses
DNA Viruses:

a. Pox viruses
b. Herpes viruses
c. Adeno viruses
d. Papova Viruses
e. Parvo viruses
f. Oncogenic viruses

Parasitology

a. Entamoeba histolytica and free living amoeba
b. Giardia, Trichomonas, Sarcocystis, and Toxoplasma, cryptosporidium, isospora
c. Leishmania and Trypanosomes.
d. Plasmodia and Babesia
e. Medically important helminths belonging to Cestoda, Trematoda and Nematoda

Practical: Objectives:

a. Bacteriology: The student shall be able to identify pathogenic bacteria by Gram stain, morphology, colony characters and key biochemical reactions
b. Mycology: the student shall be able to identify pathogenic fungi by their appearance in Lactophenol cotton blue preparation, KOH, Indian Ink preparations, Gram and other staining as well as pertinent colony morphology
c. Parasitology: the student shall be able to identify ova and cysts of common intestinal parasites, identify blood and tissue parasites
Chapter 8 : Prevention of Infectious Diseases

Theory:
Objectives: At the end of the chapter the student shall be able to define terms; passive and active immunity, live and killed vaccine; efficacy of vaccine; disease control and eradication

a. Epidemiology of infectious diseases
b. Hygiene and protection of food and water
c. Immunization schedules in India; vaccine efficacy; universal immunization

Practical:
Objectives: At the end of the session, the student shall be able to
a. discuss a case study on an outbreak situation
b. apply principles of asepsis, antisepsis and disinfection in day-to-day clinical practice
c. interpret results of sterility tests done on various materials

Practical demonstrations:
a. Case study of an epidemic/ outbreak of nosocomial infection
b. Demonstration of vaccines & toxoids, antisera & infection specific immunoglobulins
c. Bacteriological analysis of water; Pasteurization of milk

Chapter 9 : Systemic Microbiology
(Infections & Diseases of the various systems of the Body)

a. List infectious diseases of each system and correlate them with probable aetiological agents
b. Understand the aetiology, pathogenesis and methods of laboratory diagnosis and apply that knowledge in the treatment and prevention of common communicable diseases caused by all types of microorganisms
c. Gastrointestinal infections caused by bacteria; Peptic ulcer disease; enteric fever, gastroenteritis; shigellosis; food poisoning
d. Gastrointestinal infections caused by parasites:
e. Gastrointestinal infections caused by viruses
f. Hepatitis and other infections of liver and biliary tract
g. Upper respiratory tract infections – viruses
h. Acute infections of lower respiratory tract
i. Chronic infections of lower respiratory tract; national TB control program
j. Sexually transmitted diseases; national STD control program
k. Urinary Tract infections
l. Infections of Central Nervous System – bacterial
m. Infections of Central Nervous System – non bacterial
n. Wound infections
o. Superficial fungal infections: dermatomycoses; national leprosy control program
p. Deep mycoses
q. Eye infections: national program for prevention of blindness
r. Septicaemic conditions
s. Bone, joint and related conditions
t. Exanthematous conditions
u. Opportunistic infections
v. Blood and issue parasites; national filariasis control program, national malaria control program

Practical:
Objectives: At the end of the session, the student shall be able to identify the agents causing infections of various systems of the body and the student shall be able to collect appropriate specimens at an appropriate time and send them to the laboratory.

Practical exercises:
a. Viable counts on normal faeces
b. Case study – dysentery; stool with ova and cysts
c. Case study – cholera with demonstrations
d. Case study – typhoid with demonstrations
e. Case study – infective and serum hepatitis with demonstrations
f. Case study – diphtheria with demonstrations
g. Case discussion – diagnosis of tuberculosis
h. Microscopic morphology of agents causing STD; Demonstrations of syphilis and HIV serology
i. Case study – UTI with demonstrations
j. Microbiology of CNS infections – demonstrations
k. Carrier study of Staphylococcus on skin, throat and nose
l. Diagnosis of dermatomycosis, mycetoma and chromomycosis
m. Laboratory diagnosis of candidiasis and cryptococcosis
n. Demonstration of fungi causing deep mycoses
o. Demonstration of agents causing eye infections
p. Case study – endocarditis, Gram negative septicaemia, brucellosis, enteric fever and parasitaemia
q. Case study – acute infections of bone, etc.

Division of Syllabus paperwise:
PAPER I: General bacteriology, immunology & systemic bacteriology
PAPER II: Parasitology, Virology and Mycology.

Microbiology books recommended:
2. Medical Microbiology – Dr.C.P.Baveja
3. Microbiology – Dr.Arora
4. Microbiology – Chakrabarthy

Reference Books:
1. Review of Microbiology – Jawetz
2. Essential Immunology – Ivon Roitt
3. Text Book of Parasitology – S.C.Parija (Reference)
SYLLABUS FOR 2nd PROFESSIONAL

4) PHARMACOLOGY & THERAPEUTICS

(i) Goal:
The broad goal of the teaching of undergraduate student in pharmacology is to inculcate a rational and scientific basis of therapeutics.

(ii) 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 the 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
   (i) Individual needs;
   (ii) Mass therapy under national health programmes
(4) Describe the pharmacokinetic basis clinical presentation, diagnosis and management of common poisonings;
(5) List the drugs of addition and recommend the management;
(6) Classify environmental and occupational pollutants and state the management issues;
(7) Indicate causations in prescription of drugs in special medical situations such as pregnancy, lactation, infancy and old age;
(8) Integrate the concept of rational drug therapy in clinical pharmacology;
(9) State the principles underlying the concept of Essential Drugs;
(10) Evaluate the ethics and modalities involved in the development and introduction of new drugs;

(b) SKILLS:
At the end of the course, the student shall be able to:

(1) Prescribe drugs for common ailments;
(2) Recognise adverse reactions and interactions of commonly used drugs;
(3) Observe experiments designed for study of effects of drugs, bioassay and interpretation of the experimental date;
(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 are pre clinical departments.
4) SYLLABUS OF PHARMACOLOGY:

i) Theory

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the Unit</th>
<th>No. of Hours</th>
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<tbody>
<tr>
<td>1.</td>
<td>General pharmacology</td>
<td>10</td>
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<td>2.</td>
<td>Autonomic nervous system</td>
<td>8</td>
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<td>3.</td>
<td>Central nervous system</td>
<td>16</td>
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<td>4.</td>
<td>Cardio vascular system</td>
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<td>5.</td>
<td>Biogenic amines &amp; Autocoids</td>
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<td>6.</td>
<td>Respiratory system</td>
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<td>7.</td>
<td>Blood and blood forming agents</td>
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<td></td>
<td>Anticoagulants, fibrinolytic drugs etc.,</td>
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<td>8.</td>
<td>Kidney – diuretics</td>
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<td>9.</td>
<td>Gastro intestinal system</td>
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<td>10.</td>
<td>Drugs acting on the Uterus</td>
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<td>11.</td>
<td>Chemotherapy</td>
<td>22</td>
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<td>12.</td>
<td>Endocrinology</td>
<td>10</td>
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<td>13.</td>
<td>Dermatological Pharmacology</td>
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<td>14.</td>
<td>Geriatric pharmacology</td>
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<td>15.</td>
<td>Paediatric Pharmacology/Neonatal Pharmacology</td>
<td>1</td>
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<td>16.</td>
<td>Safety of drugs in Pregnancy</td>
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<tr>
<td>17.</td>
<td>Hazards of smoking, alcohol, narcotics, Environmental pollution</td>
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<tr>
<td>18.</td>
<td>Immuno Pharmacology</td>
<td>1</td>
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<td>19.</td>
<td>Metallic poisoning</td>
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<tr>
<td>20.</td>
<td>Vitamins &amp; Sex Hormones</td>
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<tr>
<td>21.</td>
<td>National programmes including Management of AIDS</td>
<td>2</td>
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</tbody>
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Total Hours 100

DETAILED SYLLABUS OF PHARMACOLOGY

1) General Pharmacology
- Sources of drugs
- Routes of drug administration
- Drug absorption
- Drug distribution
- Drug Bio transformation
- Drug excretion
- Methods of prolonging drug action
- Mechanisms of drug action
- Factors modifying drug action
- Bio-availability, Biological half-life, Bioequivalence
- Adverse drug reactions
- Drug dependence
- Drug Interactions
- Structural activity relationship
- Clinical evaluation of a New drug

2) Autonomic Nervous System
- Introduction to Autonomic Nervous System
- Adrenergic transmission
- Adrenergic drugs
- Adrenergic blocking agents
- Cholinergic transmission
- Cholinergic drugs
- Cholinergic blocking agents
- Anticholinesterases
- Treatment of parkinsonism
- Treatment of Organophosphorous poisoning.
3) Central Nervous System
- Introduction of historical aspects, alcohols
- General Anaesthetics, basal anaesthesia of Premedication
- Depressants - Barbiturates, Opioids, Benzodiazepines, Antipyretics and analgesics, (NSAIDS)
- Stimulants – Central nervous system stimulants and spinal stimulants
  Epilepsy and anticonvulsants
- Drug addiction
- Skeletal Muscle relaxants
- Local Anaesthetics
- Psychopharmacology

4) Cardiovascular system
- Cardiac glycosides
- Anti arrhythmic agents
- Anti hypertensives
- Anti anginal drugs
- Pharmacology of shock, Vasodilators and management of myocardial infarction, cardiogenic shock, left ventricular failure.
- Plasma lipid lowering agents
- Diuretics

5) Autocoids
- Histamine, Antihistamines
- Serotonin & its antagonists
- Prostaglandins, Brady Kinins
- Polypeptides, Rennin-Angiotensin mechanism

6) Miscellaneous topics
- Heavy metal Poisoning
- Environmental Poisoning
- Hazards of smoking
- Drugs of addiction
- Geriatric Pharmacology
- Paediatric pharmacology
- Dermatological pharmacology
- General Principles of management of Poisoning
- Drugs during pregnancy, Lactation
- Drugs and preventive measures for AIDS, and National World Health Organisation programmes.

7) Chemotherapy
- Introduction and principles of Antimicrobial Therapy
- Sulfonamides, Cotrimoxazole and Fluoroquinolones
- Penicillins and Newer Penicillins
- Cephalosporins
- Macrolides and other Antibiotics
- Aminoglycosides Antibiotics
- Broad spectrum antibiotics
- Chemotherapy of UTI
- Antituberculosis drugs
- Anti leprotic drugs
- Anti fungal drugs
- Anti viral drugs & Chemotherapy of AIDS
- Anti Malarials
- Antiamoebic drugs
- Chemotherapy of other Anti protozoal infections
- Anthelmintics
- Antiseptics, Disinfectants and ectoparasites
- Chemotherapy of neoplastic diseases.

8) Blood
- Megaloblastic anaemias
- Microcytic (Iron deficiency) Anaemias
- Anti coagulants
- Fibrinolytic agents & Anti platelet agents

9) Drugs acting on uterus
- Uterine stimulants
- Uterine relaxants

10) Respiratory system
- Cough suporessants & Mucolytic agents
- Treatment of Bronchial Asthma

11) Respiratory system
8) Drugs acting on Uterus, Respiratory System and G.I.T. & Blood
- Appetite stimulants & suppressants
- Emetics & Anti emetics (Prokinetic agents)
- Anti diarrhoeal agents Treatment of diarrhoea
- Treatment of peptic ulcer
- Purgatives

12) Hormones (Endocrinology)
- Posterior pituitary hormones & related factors, ADH.
- Anterior pituitary growth hormones
- Thyroid hormone & Antithyroid drugs
- Diabetes mellitus – Insulin, oral Antidiabetic drugs and newer antidiabetic drugs
- Adrenal cortical Steroids – Miners corticoids and synthetic steroids
- Parathyroid – Parathormone – Calcitonin – Calcium metabolism
- Sex hormones – Estrogens, Progestins and anti estrogens, antiprogestins
- Androgens – Antiandrogens

Division of Pharmacology syllabus paper wise:

PAPER I: General Pharmacology, ANS, CNS, CVS AND drugs actings on renal systems.
PAPER II: Chemotherapy, hormones, GIT, Blood, Drugs acting on uterus, Heavy metal poisons, Drugs for Resp. diseases.

ii PRACTICAL SYLLABUS (Pharmacology) 60 hours

This includes preparation of different dosage forms, formulations, prescription writing, clinical Pharmacy exercises, problem bases clinical study of cases, drug interactions, adverse drug reactions, demonstrations of the museum specimens attached to the department, visit to a pharmaceutical company, bedside teaching.

EXPERIMENTAL PHARMACOLOGY DEMONSTRATION 60 hours
- Effects of Cholinergic, adrenergic, histaminergic drugs and their antagonists on dogs.
- Skeletal muscle relaxant effect in rabbits.
- Opioid analgesic effect, straub’s test in mice
- Convulsant and anticonvulsant effects of certain drugs in rats and mice by different methods.
- General anaesthetic effect of ether of certain drugs in rats and mice by different methods
- Analgesic and anti inflammatory effects of certain drugs in rats and mice by different methods.
- Prothromben time estimation
- Respiratory function tests and the effect of drugs in their alteration – Beta Blockers – Selective and non-selective.
- General principles of spectroscopy, Colorimetry, Fluorimetry HPLC etc., with live demonstration if possible
- Clinical Pharmaco Kinetics:
Study of half life of a drug, bio-availability etc., wherever facilities are available in the college or locally at any other institute.

iii) CLINICAL ORIENTED PROBLEMS: 60 hours
   - Problem based learning (PBL)
   - Continuing Medical Education (CME)
   - Integrated teaching (ITC) classes
   - Seminars
   - Visit to Pharmaceutical firms

iv) Tutorials: 20 hours
   The tutorial hours can be enhanced by reducing the same from either i), ii) or iii)

SUGGESTED STANDARD TEXT BOOKS

1. Pharmacology & Pharmacotherapeutics by Dr. Satoskar
2. Essentials of Medical Pharmacology by Dr. Tripathi.

REFERENCE BOOKS:

2. Pharmacological basis of Therapeutics by Goodman & Gillman.
SYLLABUS FOR 2nd PROFESSIONAL

5) FORENSIC MEDICINE INCLUDING TOXICOLOGY:

(i) Goal:
The broad goal of the teaching of undergraduate students in Forensic Medicine is to produce a physician who is well informed about mediocolegal responsibilities in practice of medicine. He / She will also be capable of making observations and inferring conclusions by logical deductions to set enquiries on the right track in criminal matters and connected mediocolegal problems. He / She acquires knowledge of law in relation to medical practice, medical negligence and respect for codes for medical ethics.

(ii) Objectives:
(a) KNOWLEDGE:
At the end of the course, the student shall be able to:
1. Identify the basic mediocolegal aspects of hospital and general practice;
2. Define the mediocolegal responsibilities of a general physician while rendering community service either in a rural primary health centre or an urban health centre;
3. Appreciate the physician’s responsibilities in criminal matters and respect for the codes of medical ethics;
4. Diagnose, manage and identify also legal aspects of common acute and chronic poisonings;
5. Describe the mediocolegal aspects and findings of postmortem examination in case of death due to common unnatural conditions and poisonings;
6. Detect occupational and environmental poisoning prevention and epidemiology of common poisoning and their legal aspects particularly pertaining to Workmen’s Compensations Act;
7. Describe the general principles of analytical toxicology.

(b) SKILLS:
At the end of the course, the student shall be able to:
1. Make observations and logical inferences in order to initiate enquiries in criminal matters and mediocolegal problems.
2. Diagnose and treat common emergencies in poisoning and manage chronic toxicity;
3. Make observations and interpret findings at postmortem examination;
4. Observe the principles of medical ethics in the practice of medical Profession.

(c) INTEGRATION:
Department shall provide an integrated approach towards allied disciplines like Pathology, Radiology, Forensic Sciences, Hospital Administration etc., to impart training regards mediocolegal responsibilities of physicians at all levels of health care. Integration with relevant disciplines will provide scientific basis of clinical toxicology e.g. medicine, pharmacology etc.,
## 5) SYLLABUS OF FORENSIC MEDICINE:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
<th>No. of Hours</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Theory</td>
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<tr>
<td>1.</td>
<td>Introduction to legal procedure at an inquest, Criminal courts and their</td>
<td>4</td>
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<td>powers and procedures, examination of a medical witness in the court, Medical</td>
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<td></td>
<td>evidence, Types of witness. Conduct and duties of doctor in the witness box,</td>
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<td></td>
<td>procedures of examination of the body at the scene of crime, criminal trial.</td>
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<td>2.</td>
<td>Medical law and Ethics-functions of medical councils, code of medical ethics,</td>
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<td>infamous conduct, rights and duties of medical practitioners, physician’s</td>
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<td>responsibility in criminal matters, professional negligence, Vicarious liability,</td>
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<td>Medical records, Products liability, Medical indemnity, insurance, Euthanasia,</td>
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<td>consent in Medical practice, medical experimentation. Malingering. Consumer</td>
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<td>protection Act &amp; Consumer courts.</td>
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<tr>
<td>3.</td>
<td>Identification of the living and the dead.</td>
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<td>4.</td>
<td>Medicolegal Autopsy. Rules for autopsies, Autopsy of a dead body of</td>
<td>2</td>
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<td>decomposed and mutilated bodies; preservation of viscera for chemical analysis;</td>
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<td>skeletal remains; Exhumation.</td>
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<td>5.</td>
<td>Death and Postmortem changes – Medicolegal aspects of death, modes of death,</td>
<td>2</td>
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<td>causes of death, Negative autopsy, sudden death, signs of death and changes</td>
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<td>following death with special reference to time since death.</td>
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<td>6.</td>
<td>Mechanical wounds – Mechanism of wound production, Detailed study of wounds,</td>
<td>5</td>
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<td></td>
<td>Medicolegal aspects in relation to accident, suicide and Homicide, Traffic</td>
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<td>accidents, Regional injuries, Examination of wounded person.</td>
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<td>7.</td>
<td>Death from starvation, cold, burns, electricity and lightning and dowry deaths.</td>
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<td>8.</td>
<td>Death due to mechanical asphyxia- Hanging, strangulation, suffocation, drowning</td>
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<td>etc.</td>
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<td>9.</td>
<td>Impotence, sterility, artificial insemination</td>
<td>2</td>
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<tr>
<td>10.</td>
<td>Medicolegal aspects of Virginity, Pregnancy and delivery &amp; legitimacy.</td>
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<td>11.</td>
<td>Sexual Offences – Rape, Unnatural offences, sexual perversions.</td>
<td>3</td>
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<td>12.</td>
<td>Abortion and infanticide.</td>
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<td>Theory</td>
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<tr>
<td>13</td>
<td>Medicolegal importance of Examination of blood stains, seminal stains, hair,</td>
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<td></td>
<td>weapons, clothes etc.,</td>
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<tr>
<td>14</td>
<td>Forensic Psychiatry</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>Artefacts and their medicolegal Importance.</td>
<td>1</td>
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<tr>
<td>16</td>
<td>Poisons-Medicolegal aspects, classification, Routes of administration, mode of</td>
<td>4</td>
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<tr>
<td></td>
<td>action and Disposal in the body, diagnosis of poisoning in the living and dead,</td>
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<tr>
<td></td>
<td>duties of doctor in poisoning cases in general</td>
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<tr>
<td>17</td>
<td>Detailed study of poisons commonly used in India: Sulphuric acid, Oxalic acid,</td>
<td>10</td>
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<td></td>
<td>Carbolic acid, aspirin, pain killers, potassium permanganate, Organic irritant</td>
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<tr>
<td></td>
<td>poisons, such as ricinus, croton, Abrus ergot, semicarpus, calotropis, cantharides,</td>
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<td></td>
<td>Snakes, scorpions, Bees &amp; Wasp: opium, alcohol, Methyl alcohol, Barbiturates,</td>
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<td></td>
<td>Chloral hydrate, Kerosine, Anti-histaminics, Tranquilisers, Bromides, Datura,</td>
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<td></td>
<td>Cannabis, Cocaine, Strychnine, Cardiac poisons like Digitalis, Oleander, quinine,</td>
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<tr>
<td></td>
<td>aconite, Hydrocyanic acid; Asphyxiants like, CO, CO2, H2S, Drug dependence and</td>
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<td>food poisoning, Metallic poisons, organo phosphorus compounds, weedicides,</td>
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<td>insedicides and rodenticides.</td>
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<td>18</td>
<td>Integrated teaching with clinical departments (Radiology, Casualty, Pharmacology,</td>
<td>6</td>
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<tr>
<td></td>
<td>Pathology, Medicine)</td>
<td></td>
</tr>
</tbody>
</table>

**RECOMONDED BOOKS**

1. Essentials of Forensic Medicine & Toxicology Dr.K.S.Narayana Reddy
2. Modi's Text Book of Medical Jurisprudence & Toxicology Dr.V.Subramanyam.
3. M.K.R.Krishna's Hand Book of Forensic Medicine & Toxicology Dr.V.V.Pillay.
4. Principles of Forensic Medicine DrApurba Nandy.
5. Medical Jursiprudence & Toxicology C.K.Parikh
6. Forensic Medicine by P.V.Guharaj.

**REFERENCE BOOKS:**

1. Pathology of Homicide Bernard Knight
2. Text Book of Medical Jurisprudence & Toxicology Glaissiter
4. Modern Medical Toxicology Dr.V.V.Pillay.
5. Mannual of Legal Medicine G.Radnal.
BACHELOR OF MEDICINE & BACHELOR OF SURGERY

III rd PROFESSIONAL - PART – I SYLLABUS

1) ENT (OTO RHINOLARYNGOLOGY)
2) OPHTHALMOLOGY
3) COMMUNITY MEDICINE
III rd PROFESSIONAL - PART – I SYLLABUS

(1) OTO – RHINO – LARYNGOLOGY (ENT):

Goal:

The broad goal of the teaching of under graduate students in Otorhinolaryngology is that the
under graduate students have acquired adequate knowledge and skills for optimally dealing
with common disorders and emergencies and principles of rehabilitation of the impaired
hearing.

Objectives:

(a) KNOWLEDGE:

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

(1) Describe the basic pathophysiology of common Ear Nose and Throat (ENT) diseases
and emergencies;
(2) Adopt the rational use of commonly used drugs, keeping in mind their adverse
reactions;
(3) Suggest common investigative procedures and their interpretation.

(b) SKILLS:

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

(1) examine and diagnose common Ear, Nose and Throat (ENT) problems including the
pre-malignant and malignant disorders of the head and neck;
(2) Manage Ear, Nose and Throat (ENT) problems at the first level of care and be able to
refer whenever necessary;
(3) Assist / Carry out minor surgical procedures like ear syringing, ear dressings; nasal
packing etc;
(4) Assist in certain procedures such as tracheostomy, endoscopies and removal of
foreign bodies.

(c) INTEGRATION:

The undergraduate training in Ear, Nose and Throat (ENT) will provide and integrated
approach towards other disciplines especially Neuro sciences ophthalmology and general
surgery.
**Syllabus of Oto Rhino Laryngology (ENT):**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit.</th>
<th>No.of Hours</th>
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<tbody>
<tr>
<td>1</td>
<td>Surgical Anatomy and Physiology of the Nose, paranasal Sinuses and Nasopharynx</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Examination of Nasal Passages, Nasopharynx and Paranasal sinuses.</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Disease of the Nose: Congenital Malformations, Stenosis of Anterior nares,</td>
<td>2</td>
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<td></td>
<td>Posterior Chaonal atresia, Dermoid Cyst, injuries, C.S.F. Rhinorrhoea, Oron-</td>
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<td></td>
<td>antral fistula, Nasal Furunculosis, Vestibulitis.</td>
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<td>4</td>
<td>Diseases of Nasal Septum: Haematoma, Abscess, Ulceration, Perforation, Deviation</td>
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<td></td>
<td>and Spurs.</td>
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<td>5</td>
<td>Diseases of the Nasal Cavity:</td>
<td>2</td>
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<td></td>
<td>Foreign bodies, Rhinoliths</td>
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<td></td>
<td>Acute Rhinitis:</td>
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<td></td>
<td>Nonspecific: common cold</td>
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<td></td>
<td>Specific: Diphtheria, Lupus, TB, Syphilitic, Leprosy, Rhinosporidiosis, Other</td>
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<tr>
<td></td>
<td>diseases: Rhinoscleroma, Malignant Gramuloma, Nasal Allergy, Nasal Polyposis</td>
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<tr>
<td>6</td>
<td>Epistaxis.</td>
<td>1</td>
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<td>7</td>
<td>Sinusitis: General Consideration of Acute and Chronic Sinusitis, Diagnosis: &amp;</td>
<td>2</td>
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<tr>
<td></td>
<td>Treatment. Frontal Sinusitis, Ethmoiditis, Sphenoiditis. Acute and Chronic</td>
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<td></td>
<td>Maxillary Sinusitis.</td>
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<td>8</td>
<td>Complications of Suppurative Sinusitis-Frontal Osteomyelitis, Osteomyelitis of</td>
<td>2</td>
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<td></td>
<td>Maxilla, Orbital complication, Intracranial Complications, Secondary effects of</td>
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<tr>
<td></td>
<td>Sinusitis.</td>
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<td>9</td>
<td>New Growths and Cysts of the Nose and Sinuses: Papilloma, Angioma, Carcinoma,</td>
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<td></td>
<td>Sarcoma and simple cysts.</td>
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<td>10</td>
<td>Diseases of the Nasopharynx:</td>
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<td></td>
<td>congenital Dermoid, Nasopharyngitis-Acute and Chronic, Adenoids, New growths:</td>
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<td></td>
<td>Benign Juvenile Angiofibromas, Malignant-Carcinoma.</td>
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</table>

**PHARYNX**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit.</th>
<th>No.of Hours</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Surgical Anatomy and Applied Physiology, (Pharynx- Oropharynx, Laryngopharynx,</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Parapharyngeal space).</td>
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<tr>
<td>2</td>
<td>Examination of the Pharynx.</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Diseases of the Pharynx: Foreign bodies, Trauma, Inflammations, - Acute-</td>
<td>1</td>
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<tr>
<td></td>
<td>Moniliasis. Chronic non specific Pharyngitis. Specific – Tuberculosis, Syphilis,</td>
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<tr>
<td></td>
<td>Leprosy, Rhinoscleroma.</td>
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<tr>
<td>4</td>
<td>Acute Tonsillitis – Chronic Tonsillitis</td>
<td>1</td>
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<tr>
<td>5</td>
<td>Abscesses of the Pharynx. Peritonsillar Abscess, Para Pharyngeal abscess,</td>
<td>1</td>
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<tr>
<td></td>
<td>Acute and Chronic Retropharyngeal abscess, Ludwig’s angina.</td>
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<tr>
<td>6</td>
<td>New growths- Benign and Malignant.</td>
<td>1</td>
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</tbody>
</table>
### EAR SURGICAL ANATOMY AND APPLIED PHYSIOLOGY

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit.</th>
<th>No. of Hours</th>
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</thead>
<tbody>
<tr>
<td>1)</td>
<td>Examination of the Ear: Clinical Examination of the Ear. Functional Examinations – Tests for hearing. Tests for Vertigo and Eustachian tube.</td>
<td>1</td>
</tr>
<tr>
<td>3)</td>
<td>Acute Inflammations of Middle Ear Cleft. Eustachian Salpingitis-Acute and chronic Acute Catarrhal Otitis media, Acute Suppurative otitis media, Acute Mastoiditis.</td>
<td>2</td>
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<tr>
<td>4)</td>
<td>Chronic Suppurative Otitis media-safe and unsafe.</td>
<td>1</td>
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<tr>
<td>5)</td>
<td>Other types (Non suppurative)Chronic Catarrhal Otitis media, Secretory Otitis media, Otitis Barotrauma, Tuberculous Otisis media, Syphilitic Otitis media.</td>
<td>1</td>
</tr>
<tr>
<td>6)</td>
<td>Complications of Suppurative Otitis media; extracranial: Mastoiditis, Mastoid abscess, Petrositis, facial nerve paralysis, Labyrinthitis. Intracranial.</td>
<td>1</td>
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<tr>
<td>7)</td>
<td>Otosclerosis: Etiology, Pathology, Clinical features,management.</td>
<td>1</td>
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<td>8)</td>
<td>Prevention of Otitis media and Prevention of complications of Otitis media.</td>
<td>1</td>
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<tr>
<td>9)</td>
<td>Diseases of Inner Ear: Congenital inner ear disorders, Traumatic disorders of the inner ear, ear, Otogenic labyrinthitis, Mumps, Herpes, zooster Oticus, Rubella, Meningitis, deafness.</td>
<td>2</td>
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<tr>
<td>10)</td>
<td>Noise trauma, Drug toxicity, Presbyacusis, Meniere’s disease, Auditory Nerve tumour.</td>
<td>2</td>
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<tr>
<td>11)</td>
<td>Newgrowths: Middle ear and mastoid: Carcinoma, Glomus Jugulare tumour.</td>
<td>1</td>
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<tr>
<td>12)</td>
<td>Rehabilitation of Deaf and Dumb.</td>
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### LARYNX, TRACHEA AND BRONCHI:

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<tr>
<th>Sl. No.</th>
<th>Name of the Unit.</th>
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</thead>
<tbody>
<tr>
<td>1)</td>
<td>Surgical Anatomy and applied physiology of Larynx, Trachea and bronchi.</td>
<td>1</td>
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<tr>
<td>2)</td>
<td>Examination of the Larynx and lower respiratory tract</td>
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<tr>
<td>3)</td>
<td>Diseases of the Larynx-Congential malformations of Larynx. Foreign bodies in the air passages.</td>
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<td>5)</td>
<td>Functional aphonyia.</td>
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<td>6)</td>
<td>STRIDOR</td>
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<tr>
<td>7)</td>
<td>New-growths of the Larynx: Beneign, Malignant</td>
<td>1</td>
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<tr>
<td>8)</td>
<td>Tracheostomy : Indications, Technique, after treatment, complications.</td>
<td>1</td>
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<tr>
<td>9)</td>
<td>Endoscopy in ENT – Method, indications of Laryngoscopy and Bronchoscopy.</td>
<td></td>
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</tbody>
</table>
### Oesophagus:

1. **Anatomy and Physiology of deglutition, Diseases of Oesophagus, P.V Syndrome, Cardiospasm.**
   - Strictures of Oesophagus– Benign & Malignant, corrosive burns and carcinoma of Oesophagus.
   - Hours: 1

2. **F.B. in food and air Passages Indications and contraindications of Oesophagoscopy.**
   - Technique & complications.
   - Hours: 1

3. **Neck swellings – Differential diagnosis & Management.**
   - Hours: 1

### Teaching Programme During Clinical Postings of ENT:

**Total Time: 30 hours**

<table>
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<tr>
<th>Sl. No</th>
<th>Name of the Unit.</th>
<th>Hours</th>
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<tbody>
<tr>
<td>a)</td>
<td>Surgical anatomy of the Ear, Lecture and Demonstration of dissected temporal bone.</td>
<td>1</td>
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<tr>
<td>b)</td>
<td>Applied physiology of Hearing. Auditory function tests. Demonstration of audiometry test.</td>
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<tr>
<td>c)</td>
<td>Applied physiology of Equilibrium Vestibular function tests. Lecture / Demonstration in Otoneurology Dept. using E.N.G.Machine.</td>
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<tr>
<td>d)</td>
<td>History taking in ear diseases and clinical examination of the ear. Demonstration.</td>
<td>1</td>
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<tr>
<td>e)</td>
<td>Audimetry – various types of hearing aids. Cochlear Implants. Lecture / Demonstration in speech &amp; hearing Department.</td>
<td>2</td>
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<tr>
<td>f)</td>
<td>Congential deafness. Causes, prevention and management.</td>
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<td>g)</td>
<td>Common surgical procedures on the ear Lecture / Video demonstration. Instruments X-Ray.</td>
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<tr>
<td>h)</td>
<td>Anatomy and Physiology of Nose &amp; PNS.</td>
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<tr>
<td>i)</td>
<td>History taking in the diseases of the Nose and PNS and Clinical Examination of Nose &amp; PNS.</td>
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<td>j)</td>
<td>Respiratory allergy. Pathology, clinical presentation. Diagnostic tests and specific desensitization. Lecture / Demo. Allergy Clinic, ENT.</td>
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<td>k)</td>
<td>D.D. of nasal obstruction &amp; Discharge. Disorders of olfaction.</td>
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<td>l)</td>
<td>Head ache and Facial Pain. D.D.Clinical case demonstration.</td>
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<td>m)</td>
<td>F.E.S.S. basic principles. Lecture Demo / Video presentation</td>
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<td>n)</td>
<td>Common surgical procedures on Nose and P.N.S. Lecture / Video / Live operation. Surgical instruments and X-Rays and C.Ts. pertaining to Nose and P.N.S.</td>
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<td>o)</td>
<td>Anatomy of Pharynx. Physiology of Deglutition.</td>
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<td>p)</td>
<td>History taking and clinical exam of Pharyngeal diseases.</td>
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<td>q)</td>
<td>Ulcer membraneous lesions of Pharynx.</td>
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<td>r)</td>
<td>Cancer of oro and Hypopharynx. Recent trends in management.</td>
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<tr>
<td>s)</td>
<td>Anatomy of larynx. Physiology of Phonation.</td>
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<td>Sl. No</td>
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<tr>
<td>t)</td>
<td>History taking and clinical exam. of laryngeal diseases.</td>
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<td>u)</td>
<td>Hoarseness of Voice. Disorders of voice &amp; speech.</td>
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<td>v)</td>
<td>Stridor in infancy and childhood</td>
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<tr>
<td>w)</td>
<td>Cancer larynx. Aetiology and diagnosis. Recent trends in management / prevention.</td>
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<td>x)</td>
<td>Per oral endoscopy</td>
<td>1</td>
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<tr>
<td>y)</td>
<td>Tracheostomy. Lecture / Video</td>
<td>1</td>
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<tr>
<td>z)</td>
<td>Common surgical procedures in the throat. Lecture / Video. Surgical instruments and X-Rays pertaining to throat.</td>
<td>2</td>
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</tbody>
</table>

**Books recommended**
1. Text book of ENT by Logan & Turner
2. Diseases of ENT by Dr. Ramanjaneyulu
3. Diseases of ENT by Dr. K.K. Ramalingam
4. Diseases of ENT by Maqbool
5. Diseases of ENT by Scoft & Brown

**Reference books**
1. Shambaugh Ear Surgery
2. North American Clinics of ENT
3. Journal of Otology & Laryngology
III rd PROFESSIONAL - PART – I SYLLABUS

(2) OPHTHALMOLOGY:
(i) Goal:
The broad goal of the teaching of under graduate students in ophthalmology is to provide such knowledge and skills to the student that shall enable him/her to practice as a clinical and as a primary eye care physician and also to function effectively as a community health leader to assist in the implementation of national Programme for the prevention of blindness and rehabilitation of the visually impaired.

(ii) Objectives:
   a) KNOWLEDGE:
      At the end of the course, the student shall be able to:
      1) common problems affecting the eye;
      2) principles of management of major ophthalmic emergencies;
      3) main systemic diseases affecting the eye;
      4) effects of local and systemic diseases on patient’s vision and the necessary action required to minimise the sequance of such diseases;
      5) adverse drug reactions with special reference to ophthalmic manifestations;
      6) magnitude of blindness in India and its main causes;
      7) national programme for control of blindness and its implementation at various levels;
      8) eye care education for prevention of eye problems;
      9) role of primary health centre in organization of eye camps;
     10) organization of primary health care and the functioning of the ophthalmic assistant;
     11) integration of the national programme for control of blindness with the other national health programmes.
     12) Eye bank organization;
   
   b) SKILLS:
      By the end of the course the student shall be able to:
      1) Elicit a history pertinent to general health and ocular states:
      2) Assist in diagnostic procedures such as visual acuity testing, examination of eye, Schiotz tonometry, Staining for Corneal pathology confrontation perimetry, Subjective refraction including correction of presbyopia and aphakia direct ophthalmoscopy and conjunctival smear examination and Cover test:
      3) Diagnose and treat common problems affecting the eye:
      4) Interpret ophthalmic signs in relation to common systemic disorders.
      5) Assist/observe therapeutic procedures such as subconjunctival injection, corneal/conjunctival foreign body removal, carbolic cautery for corneal ulcers, Nasolacrimal duct syringing and tarsorraphy:
      6) Provide first aid in major ophthalmic emergencies:
      7) Assist to organise primary eye care service through primary health centres:
      8) assist to organise community surveys for visual check up:
      9) Use effective means of communication with the public and individual to motivate for surgery in cataract and for eye donation:
     10) Establish rapaport with his senior colleagues and paramedical workers, so as to effectively function as a member of the eye care team:
NOTE: 40 Hrs. teaching for theory in VI & VII Semesters.
60 Hrs. for Practical based Learning, Seminars, Group discussions.

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<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
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<tbody>
<tr>
<td>1)</td>
<td>Introduction to Ophthalmology.</td>
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<tr>
<td>2)</td>
<td>Anatomy and Physiology, colour vision:- Visual acuity, Photo Chemistry of vision.</td>
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<tr>
<td>3)</td>
<td>Orbit, Ocular adnexa (Lids and Lacrimal apparatus) and optic nerve pathways.</td>
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<td>4)</td>
<td>Conjunctiva, Cornea, Sclera, Contact Lenses and Eye Banking, Bacterial, Viral</td>
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<td></td>
<td>and Fungal Keratitis.</td>
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<td>5)</td>
<td>Lens, Glaucoma.</td>
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<td>6)</td>
<td>Iris, Choroid and Ocular Tumors.</td>
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<tr>
<td>7)</td>
<td>Ocular Manifestation of Systemic diseases.</td>
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<tr>
<td>8)</td>
<td>Fundus and Ophthalmoscopic Examination : (Theory). RETINA AND OPTIC NERVE.</td>
</tr>
<tr>
<td>9)</td>
<td>Refraction and Optics, Drugs acting on Eye.</td>
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<tr>
<td>10)</td>
<td>Squint, Amblyopia and Neuro Ophthalmology.</td>
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<td>11)</td>
<td>Primary Eye care:</td>
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<td></td>
<td>a) Progressive loss of vision</td>
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<td></td>
<td>b) Sudden loss of Vision.</td>
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<td>12)</td>
<td>Ocular Trauma, FIRST AID</td>
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<td>13)</td>
<td>Visual Standards, Certification, Ocular Hygiene</td>
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<tr>
<td>14)</td>
<td>National Programme for control of Blindness.</td>
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</tbody>
</table>

TEXT BOOKS RECOMMENDED:
1) Parsons’ Diseases of the Eye By Stephen J.H. Miller
2) Ophthalmology by Khurana
3) Text book of Ophthalmology by Sarma
4) Text book of Ophthalmology by neema

REFERENCE BOOKS:
1) Ophthalmology by Yanoff
2) Ophthalmology by Duans
3) System of Ophthalmology by Sir Duke-Elder
III rd PROFESSIONAL - PART – I SYLLABUS

(3) COMMUNITY MEDICINE(S.P.M.):

(i) Goal:
The broad goal of the teaching of under graduate students in the community medicine is to prepare them to function as community and first level physicians in accordance with the institutional goals.

(ii) Objectives:
(a) KNOWLEDGE:
At the end of the course, the student shall be able to:

a. Describe the Health care delivery system including rehabilitation of the disabled in the country;

b. Describe the National Health programs with particular emphasis on maternal and child health programs, family welfare and pollution control;

c. List epidemiological methods and describe their applications to communicable and non-communicable diseases in the community or hospital situation;

d. Apply biostastical methods and techniques;

e. Outline the demographic pattern of the country and appreciate the roles of the individual, family, community and socio-culture milles in health and disease;

f. Describe the health information systems;

g. Enunciate the principles and components of primary health care the national health policies to achieve the goal of 'HEALTH FOR ALL';

h. Identify the environmental and occupational hazards and their control;

i. Describe the importance of water and sanitation in human health;

j. To understand the principles of health economics and administration, health education in relation to community;

Syllabus of Community Medicine (S.P.M.):

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the Unit</th>
<th>No. of Hours</th>
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<tbody>
<tr>
<td>1.</td>
<td>History of Community Medicine</td>
<td>2</td>
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<td>2.</td>
<td>Definition, concept of Health &amp; illness of diseases</td>
<td>2</td>
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<td>3.</td>
<td>Natural History of diseases, levels &amp; prevention</td>
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<td>4.</td>
<td>Sociology, its relation to Health &amp; disease, Social institution, role of Family in Health &amp; disease, Role of Cultural section in Health, disease &amp; Group dynamics.</td>
<td>6</td>
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<td>5.</td>
<td>Psychological aspects in disease &amp; Health, Role of individual, Family and Society.</td>
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I SEMESTER
<table>
<thead>
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<th>Sl.No.</th>
<th>Name of the Unit</th>
<th>No. of Hours</th>
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<th>Practical</th>
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<td>6.</td>
<td>Demography &amp; Population dynamics</td>
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<td></td>
<td>i) Population structures</td>
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<td>ii) Population growth</td>
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<td>iii) Population problem</td>
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<td>iv) Effect of over population on</td>
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<td>Scological degeneration</td>
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<td>7.</td>
<td>Statistics</td>
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<td>i) Basic statistical method</td>
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<tr>
<td></td>
<td>ii) Summarisation &amp; presentation of data</td>
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<td>iii) Tests of significance</td>
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<td>8.</td>
<td>Environmental sanitation &amp; Medical entomology</td>
<td>10</td>
<td>Seminars/</td>
<td>practicals:</td>
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<tr>
<td></td>
<td>i) Water</td>
<td></td>
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<td>Lab work,</td>
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<td></td>
<td>ii) Waste disposal</td>
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<td>Group discussion</td>
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<td></td>
<td>iii) Tests of significance</td>
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<td>10 hours</td>
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<td>9.</td>
<td>Genetics</td>
<td>1</td>
<td>Field visits</td>
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<td></td>
<td>i) Prevention of genetic diseases</td>
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<td>10 hours</td>
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<td></td>
<td>ii) Genetic counselling</td>
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<td>10.</td>
<td>General Epidemiology</td>
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<td></td>
<td>i) Descriptive epidemiology</td>
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<td>a) Time</td>
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<td>b) Place</td>
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<td>c) Person</td>
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<td>ii) Analytical epidemiology</td>
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<td>a) Case control</td>
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<td>b) Cohort studies</td>
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<td>iii) Experimental Epidemiology</td>
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<td>a) Case control</td>
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<td>b) Cohort studies</td>
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<td>iv) Investigation of an epidemic</td>
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<td>11.</td>
<td>Systemic epidemiology</td>
<td>30</td>
<td>Seminars/</td>
<td>Clinico social case review</td>
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<tr>
<td></td>
<td>i) Vector borne diseases</td>
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<td>45 hours</td>
<td>Field trips</td>
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<td></td>
<td>ii) Water borne diseases</td>
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<td>45 hours</td>
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<td>iii) Air born diseases</td>
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<td></td>
<td>iv) Contact diseases</td>
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<td>15 days;3hrs/day (45 hours)</td>
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<td></td>
<td>v) Diseases of major public health importance along with national health programmes wherever applicable</td>
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</table>
### IV SEMESTER

12. Non-communicable diseases: 5 15  
   i) Diabetes  
   ii) Hypertension  
   iii) Heart diseases  
   iv) Blindness  
   v) Accidents  
   vi) Geriatric problems

13. Occupational Health problems:  
   i) E.S.I. 5 10

14. M.C.H. and family welfare programs 10 10

15. Health care delivery in the community 5 5

16. National Health Policy 2 4

### V SEMESTER

17. Nation Health Programmes including Rehabilitation, Evaluation of Health Programmes, Health Planning Organisation 30 5  
   Structure of Health care system in the Country including P.H.C. District level State Level and Central level.  
   i) P.H.C. Organisation and Function 2 4  
   ii) Role of Non Governmental Organisations 1 2

18. Health Education  
   i) Principles of Health promotion 9 3  
   ii) Methods, approaches and media for I.E.C. (Information, Education & Communication)

19. Medical and Health / Information system 4 4

20. Mental Health 1+1 2

21. Nutrition 15

**NOTE**: Hours of practicals and field visits are shown together. Depending upon the facilities available locally the arrangements of practicals and field visits can be flexible.

Demarcation of Syllabus for University exam between Paper I & II
### Syllabus for Paper-I

| 2. Social Sciences:                | 2. Non communicable diseases        |
|   a) Sociology                    | 3. Occupational diseases            |
|   b) Psychosocial Problem         | 4. National Health programs         |
| 3. Nutrition                      | 5. MCH & Family Welfare             |
| 4. Environmental sanitation       | 6. Public Health Administration     |
| 1. Statistics                     | 7. N.G.O.S. and International Health|
| 2. General Epidemiology           | 8. Health education                 |

### Books Recommended:

1) Parks text book of preventive & social medicine - K. Park
2) Kulkarnis text book of preventive & social medicine - Kulkarn
3) Nutritive value of Indian foods - C. Gopalan
4) Methods in biostatistics - BK. Mahajan

### Reference books

1) Public health & preventive medicine - Maxcy-rosenau
2) Oxford text book of public health - Oxford medical publication
3) O.P. Ghai’s text book of applied medicine - O.P. Ghai
4) An outline of sociology as applied to medicine - David Armstrong
5) Uses of epidemiology - Morris
6) Short textbook of medical statistics - Hicc
7) Preveaive & community medicine - Clark
8) Human nutrition & Dietetics - Passmore
9) Epidemiology-principles & methods - Macmohan
10) Practical epidemiology - Barker
11) Theory & practice of public health - Hobson
12) An introduction to epidemiology - Michael Ackerson
13) Food poisoning & Food hygiene - Hobbs
BACHELOR OF MEDICINE & BACHELOR OF SURGERY

III rd PROFESSIONAL- PART – II SYLLABUS

1) GENERAL MEDICINE  
   (General Medicine including Pulmonary Medicine  
    Psychiatry, Skin and STD, Radiology & Dentistry)

2) PAEDIATRICS

3) GENERAL SURGERY INCLUDING PAEDIATRIC  
   SURGERY  ORTHOPAEDICS & TRAUMATOLOGY

4) OBSTERICS AND GYNAECOLOGY
(1) **GENERAL MEDICINE:**

(i) **Goal:**

The broad goal of the teaching of under graduate students in the medicine is to have the knowledge skills and behavioral attributes to function effectively as the first contact physician.

(ii) **Objectives:**

**KNOWLEDGE:**

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

1. Diagnose common clinical disorders with special reference to infectious diseases and nutritional disorders, tropical and environmental diseases;
2. Outline various modes of management including drug therapeutics especially dosage, side effects, toxicity, interactions, indications and contraindications;
3. Propose diagnostic and investigative procedures and ability to interpret them;
4. Provide first level management of acute emergencies promptly and efficiently and decide the timing and level of referral, if required.
5. Recognise geriatric disorders and their management;

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**Theory Syllabus**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
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<tbody>
<tr>
<td></td>
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<td>Theory</td>
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<tr>
<td>1.</td>
<td>HAEMATOLOGY:</td>
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<tr>
<td></td>
<td>a) Introduction and Iron deficiency Anaemias</td>
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<td></td>
<td>b) Megaloblastic anaemias, B12 &amp; Folic acid deficiency.</td>
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<td>c) Haemolytic anaemias</td>
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<td>d) Aplastic anaemia and bone marrow Transplantation</td>
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<td>e) Acute Leukaemias</td>
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<td>f) Chronic myeloid and lymphatic Leukaemias.</td>
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<td>g) Polycythemia and agranulocytosis</td>
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<td>h) Multiple myeloma</td>
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<td></td>
<td>i) Disorders of coagulation-haemophilia.</td>
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<td>j) Purpuras and consumption coagulopathy.</td>
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<td>2.</td>
<td>IMMUNOLOGY, BONES &amp; JOINTS, TOXICOLOGY:</td>
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<tr>
<td></td>
<td>IMMUNOLOGY:</td>
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<tr>
<td></td>
<td>a) Introduction/Immunoglobulins Introduction, Immunoglobulins, Complement, cytokines, H.L.A.</td>
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<td>b) Hypersensitivity reaction</td>
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<td>c) Immune deficiency diseases, Immunosuppressive drugs.</td>
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<td>BONES &amp; JOINTS:</td>
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<td></td>
<td>a) Rheumatoid arthritis</td>
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<td>b) Gout</td>
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<td>c) S.L.E.</td>
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<td>d) Osteomalacia and Osteoporosis</td>
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<td>e) Ankylosing spondylitis/Reitor’s Disease/Osteo- arthritis</td>
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<td>Sl. No.</td>
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<td>Theory</td>
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**TOXICOLOGY:**
- a) Introduction and general measures of management of poisoning
- b) Barbiturate poisoning.
- c) Organophosphorous poisoning
- d) Aluminum Phsophide poisoning
- e) Lead poisoning, Arsecnic poisoning
- f) Corban Monoxide poisoning, MIC Poisoning
- g) Copper sulphate and yellow oleander poisoning
- h) Chelating agents
- i) Drug overdosage.

3. **PULMONARY DISEASES & ENDOCRINOLEOLOGY:** 20 30

**PULMONARY DISEASES:**
- a) Pneumonias
- b) Secondary Pneumonias/Lung abscess
- c) Bronchial asthma
- d) Chronic bronchitis, emphysema
- e) Broncheitasis
- f) Pleural effusion, empyema
- g) Pneumothorax
- h) Pulmonary fibrosis-occupational lung disease
- i) Bronchogenic carcinoma
- j) Respiratory failure
- k) A.R.D.S
- l) Cystic fibrosis/pulmonary eosinophilia Loeffler’s Syndrome
- m) Pulmonary function tests
- n) Pulmonary tuberculosis
- o) Occupational lung diseases

**ENDOCRINOLOGY:**
- a) Thyrotoxicosis
- b) Myxoedema
- c) Anterior Pituitary gland
- d) Posterior Pituitary gland
- e) Addison’s disease
- f) Cushing’s syndrome
- g) Hyperaldosteronism, Phaeochromocytoma
- h) Hyper- parathyroidism
- i) Hypoparathyroidism
- j) Hypogonadism
- k) Pineal gland
- l) Hypoglycaemia
- m) Diabetes Mellitus
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<td>KIDNEY, G.I.T.&amp; LIVER :</td>
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<td>KIDNEY :</td>
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<td>a) Renal imaging</td>
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<td>b) Acute Nephritis</td>
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<td>c) Nephrotic syndrome</td>
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<td>d) Nephrotic syndrome-individual types</td>
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<td>e) Urinary tract infections including pyelonephritis</td>
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<td>f) Acute renal failure</td>
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<td>g) Chronic renal failure</td>
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<td>h) Renal Tubular acidosis</td>
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<td>i) Polycystic kidney/drug induced nephropathy</td>
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<td>G.I.T &amp; LIVER</td>
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<tr>
<td></td>
<td>a) Dysphagia</td>
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<td>b) Acid peptic disease</td>
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<td>c) Malabsorption syndrome</td>
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<td>d) Inflammatory bowel disease</td>
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<td>e) Irritable bowel syndrome</td>
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<td>f) Tropical sprue &amp; coeliac disease</td>
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<td>g) Liver function tests</td>
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<td>h) Acute Hepatitis</td>
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<td>i) Chronic hepatitis</td>
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<td>j) Cirrhosis of liver</td>
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<td>k) Hepatic encephalopathy</td>
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<td>l) Portal hypertension</td>
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<td>m) Acute Pancreatitis</td>
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<td>n) Chronic pancreatitis</td>
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<td></td>
<td>o) Hepatoma/Liver transplantation.</td>
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**PAPER-II**

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<td>5.</td>
<td>PSYCHIATRY</td>
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<td>6.</td>
<td>C.V.S., C.N.S. :</td>
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<td></td>
<td>C.V.S.</td>
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<tr>
<td></td>
<td>a) Acute rheumatic fever</td>
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<td>b) Mitral stenosis</td>
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<td>c) Mitral regurgitation and tricuspid regurgitation</td>
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<td>d) Aortic stenosis and aortic regurgitation</td>
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<td>e) Congestive heart failure</td>
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<td>f) Infective endocarditis</td>
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<td>g) Hypertension</td>
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<td>h) Ischaemic heart disease-</td>
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<tr>
<td></td>
<td>i) Pericardial effusion, constrictive pericarditis.</td>
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<td></td>
<td>j) Cardiomyopathy</td>
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<td>k) Arrhythmias including atrial fibrillation</td>
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<td>l) Cardio-pulmonary resuscitation</td>
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<td>m) Congenital heart disease</td>
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</table>
C.N.S.:
   a) Cranial nerves – trigeminal neuralgia, Bell’s palsy
   b) Coma
   c) Pyogenic meningitis
   d) Tuberculous meningitis
   e) Encephalitis
   f) C.V.A – (Ischaemic)
   g) C.V.A. – (Haemorrhagic )
   h) Epilepsy
   i) Headache – Migraine
   j) Motor neurone disease
   k) Parkinsonism and Chorea
   l) Demyelinating diseases
   m) Myopathy and myasthenia
   n) Syphilis of nervous system
   o) Peripheral neuritis /syringomyelia
   p) Paraplegia / Raised I.C.T

7. INFECTIOUS DISEASES, TROPICAL DISEASES, VITAMINS, NUTRITION, ONCOLOGY, GERIATRIC MEDICINE, AIDS, GENETICS ETC.
   INFECTIOUS DISEASES :
      a) Staphylococcal & Streptococcal infections
      b) Diphtheria, Pertusis
      c) Tetanus – Botulism
      d) Enteric fever, food poisoning
      e) Cholera, Shigella
      f) Pasteurella, Anthrax, Brucellosis
      g) Mumps / Measles / German Measles
      h) Chicken pox, small pox
      i) Herpes, Yellow fever
      j) Typhus fever
      k) Haemorrhagic viral fevers
      l) Infleunza
      m) Leptospirosis
      n) Fungal infections-systemic
      o) Nosocomial infections
   TROPICAL DISEASES :
      a) Malaria including cerebral Malaria
      b) Kala – azar
      c) Nematodes
      d) Cestodes
      e) Amoebiasis
      f) Filarisis
      g) Guinea worm
      h) Snake bite
      i) Heat & environmental diseases
VITAMINS & NUTRITION:
   a) Vit. A and Vit.D
   b) B-complex deficiency
   c) C,K&E
   d) Obesity
   e) Anti-oxidants/ Trace elements
   f) Total parenteral nutrition.

ONCOLOGY:

GERIATRIC MEDICINE:

GENETICS:
   A.I.D.S.

8. PSYCHIATRY 7 13
9. DERMATOLOGY& VENEREOLOGY 10 20

NOTE: Out of 370 classes 1/3rd should be for Theory and the remaining 2/3rd classes shall be for Lecture Demonstration/ Integrated teaching.

Text Books Recommended:

   a. Davidson’s Principles and practice of Medicine.
   c. Tropical Medicine from 14th edition of Davidson’s Principles and Practice of Medicine. (as the chapter is deleted in the present edition.)
   d. Parasitology in relation to Clinical Medicine by KD Chatterjee.

Clinical Methods Books recommended:

   1) Hutchison’s Clinical Method.
   2) Macleod’s Clinical Examiantion
   3) Chamberlain’s Clinical Methods.

* Reference Books:
   1) Harrison’s Principles of Medicine
   2) Cecils Test book of Medicine
   3) Oxford text book of Medicine
   4) Brain’s Neurology, Cardiology ‘HURST’ API Text Book of Medicine.

<table>
<thead>
<tr>
<th>Paper – I</th>
<th>Paper - II</th>
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<tbody>
<tr>
<td>b. Immunology, bones &amp; joints,</td>
<td>b. C.V.S., C.N.S.</td>
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<tr>
<td>toxicology</td>
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<tr>
<td>c. Pulmonary diseases &amp;</td>
<td>c. Infectious diseases, tropical diseases, vitamins, nutrition, oncology,</td>
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<tr>
<td>endocrinology</td>
<td>geriatric medicine, aids, genetics etc.</td>
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<td>d. Kidney, G.I.T.&amp; liver</td>
<td>d. Psychiatry</td>
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<td>e. Dermatology&amp; Venereology</td>
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III rd PROFESSIONAL - PART – II SYLLABUS

2 PAEDIATRICS :

i) Goal:

The broad goal of the teaching of undergraduate students in Paediatrics is to acquire knowledge and appropriate skills for optimally dealing with major health problems of children and to ensure their optimal growth and development.

ii) Objectives:

a) Knowledge:

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

1) Describe the normal growth and development during foetal life, neonatal period, childhood and adolescence and outline deviations thereof;
2) Describe the common pediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation;
3) State age related requirements of calories, nutrients, fluids, drugs etc., in health and disease;
4) Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisoning, accidents and child abuse;
5) Outline national programmes relating to child health including immunization programmes;

b) Skills:

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

1) Take a detailed pediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigations and plan and institute therapy;
2) Take anthropometric measurements, resuscitate newborn infants with bag and mask at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, start an intravenous line and provide nasogastric feeding, observe venesection and intraosseous infusion if possible.
3) Conduct diagnostic procedures such as lumbar puncture, bone marrow aspiration, pleural tap and ascitic tap and observe kidney biopsy.
4) Distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of preterm and low birth weight babies, provide correct guidance and counseling in breast feeding.
5) Provide ambulatory care to all sick children, identify indications for specialized / inpatient care and ensure timely referral of those who require hospitalization.

c) Integration:

The training in pediatrics should be done in an integrated manner with other disciplines, such as Anatomy, Physiology, Forensic Medicine, Community Medicine, Obstetrics and Physical medicine and Rehabilitation, to prepare the student to deliver preventive, promotive, curative and rehabilitative services for care of children both in the community and at hospital as part of a team.
Training schedule:
A model timetable that is suggested is given below:

<table>
<thead>
<tr>
<th>Semester</th>
<th>Time</th>
<th>Teaching Schedule</th>
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<tbody>
<tr>
<td>4th &amp; 5th</td>
<td>* 08-09 AM</td>
<td>Lecturers</td>
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<td>* 09-12 AM</td>
<td>Clinical Posting</td>
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<td>6th &amp; 7th</td>
<td>* 08-09 AM</td>
<td>Lecturers</td>
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<td>* 09-12 AM</td>
<td>Clinical Posting</td>
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<tr>
<td>8th &amp; 9th</td>
<td>* 08-09 AM</td>
<td>Lecturers</td>
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<td></td>
<td>* 09-12 AM</td>
<td>Clinical Posting</td>
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<tr>
<td></td>
<td>* 12-01 PM</td>
<td>Demonstrations / training tutorial</td>
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<td>* 02-04 PM</td>
<td>Practical demonstration.</td>
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</table>

* Additional 08-16 hours of Integrated Seminars.

A. Training During 4th and 5th Semester:
Learning Objective:
1) Normal Child & his assessment
   Cognitive domain- normal child, growth, development, feeding, immunization of normal new born.
2) Skills
   a) Take a detailed Pediatric History
   b) Understand normal growth and development.
   c) Conduct physical examination of children.
   d) Perform anthropometry and interpret growth of the child.
   e) Developmental assessment of a child.
   f) Ethical conduct ? Medical Conduct during patient examination
3) Lectures
   1) Introduction to Pediatrics
   2) Normal growth.
   3) Normal development.
   4) Immunization.
   5) Introduction to newborn and normal newborn baby.
   6) Temperature regulation in newborn.
   7) Breast feeding and lactation management.
   8) Infant and child feeding (include complimentary feeding).
4) Clinical Training
   Clinical Posting shall be from 9.00 am – 12.00 noon
   i) Tutorials cum demonstration for first one week
   Subjects for demonstration:
   a. Scope of pediatrics, learning objectives and teaching schedule.
   b. History taking – I (Present, Past and family)
   c. History taking-II (Antenatal, Development, Immunization, Feeding)
   d. General Physical examination.
   e. Anthropometry.
   f. Normal Development.
ii) **Case discussion** in wards with emphasis on history, general physical and systemic examination and demonstration of anthropometric techniques, during next one week.

5) **Assessment (End of Posting)** (components related to Pediatrics): Examination skills especially recording of special features of Pediatric history and anthropometry.

B) **Training During 6th, 7th, 8th and 9th Semesters**

i. **Learning Objectives**
   b) 8th / 9th Semester: Diseases in Childhood – diagnosis and management.

ii. **Lectures 6th / 7th / 8th / 9th Semester**

1. Birth Asphyxia.
3. Low birth weight babies.
7. Neonatal convulsions.
8. PEM and its management.
10. Nutritional anemia in infancy and childhood.
11. Acute diarrhea.
13. Congestive heart failure – diagnosis and management.
15. Rheumatic heart disease.
16. Hypertension in children, including hypertensive emergencies.
17. Acute respiratory infections.
18. Bronchial asthma including status asthmaticus.
20. Acute glomerulonephritis and hematuria.
21. Chronic liver disease.
22. Hemolytic anemia including thalassemia.
23. Leukemias.
24. Bleeding and coagulation disorders.
25. Seizure disorders including status epilepticus
26. Cerebral palsy.
27. Common exanthematous illnesses
28. Childhood tuberculosis.
29. Fluid and electrolyte balance – pathophysiology and principles of management and acid-base balance.
30. Shock and anaphylaxis.
31. Adolescent growth and normal puberty.
32. Other childhood malignancies (neuroblastoma, wilms tumour, lymphomas).
33. Coagulation disorders – Haemophilia.
34. Mental retardation.
35. Behaviour disorders.
36. Meningitis.
37. Diptheria, Pertussis and Tetanus.
38. Enteric fever.
39. Immunization.
41. Down’s syndrome
42. Medical ethics.
43. Pediatric prescription & rational drug therapy.

Note:
1. Some of the subjects may require more than one lectures.
2. 8-16 hours of integrated seminars (i.e. 4-8 seminars of 2 hours each) should be incorporated in the syllabus with other departments (i.e., Medicine, Obstetrics and Community Medicine). Individual departments can choose depending on local requirements or faculty. Adjustments may be made in the lecture schedule accordingly to prevent overlap of topics. A list of suggested topics is provided in

iii. Clinical Training in 6th and 7th Semesters:

a) Specific Learning Objectives (Skills)
   1. Take a detailed Pediatric History.
   2. Conduct physical examination of children.
   3. Perform anthropometry and interpret growth of the child.
   4. Developmental assessment of a child.
   5. Distinguish between normal newborn babies and those requiring special care (including low birth weight and preterms).
   6. Care of new born at birth and lying in ward.
   7. Counselling for breast feeding / infant feeding.

b) Clinical Posting (9.00 am to 12.00 noon)
   1. Clinical demonstration.
      Subjects in Neonatology (for 1 week):
      a. Neonatal History taking.
      c. Care of normal newborn at birth.
      d. Examination of Newborn.
      e. Breast feeding.
      f. Identification of sick new born (common danger signs).
      g. Low birth weight including temperature regulation and aspects (one day of the posting for immunization related services).

   2. Paediatrics - Case discussion – History taking and examination for 3 weeks in wards.

   3. Assessment (End of Posting): Emphasis on detailed history, physical examination, interpretation and correlation of abnormal physical findings and normal new born.
iv. Clinical Training in 8th and 9th Semesters:
   a) Specific Learning Objectives (Skills)
      1. Take detailed pediatric history, conduct an appropriate physical and
developmental examination of children including neonates, make clinical
diagnosis, conduct common bedside procedures (peripheral smear, Hb, Urine
and stool examination, CSF examination by microscope), interpret common
laboratory investigations and plan and institute therapy.
      2. Recognize emergencies including neonatal resuscitation and CPR and care to be
instituted and relevant procedures performed.
      3. Prepare oral rehydration solution, perform tuberculin test and administer
vaccines.
      4. Exposure to diagnostic and therapeutic procedures such as intravenous access,
nasogastric feeding, venesection, pleural tap, ascitic tap, bone marrow
aspiration, lumbar puncture, liver and kidney biopsy.

   b) Clinical Posting (9.00 am to 4.00 pm)
      1. Bed side Demonstration (9.00 am to 12.00 noon) (atleast 1 week of the 4 week
posting to be in new born wards) in wards and outpatient department from 9.00
am to 12.00 noon outpatients visits atleast once a week.
         * Case discussion (20 hours) (Suggested list of Clinical cases to be discussed is
provided in Annexure-III)
      2. Clinical tutorials (12-1 pm) (list of subjects in Annexure-III)
         * Tutorials 20 Hours.
      3. Afternoon Postings (2-4 p.m.)
         a) Immunization clinic posting.
         b) Emergency Room Posting.
         c) Diarrhea Treatment unit posting.
         d) Nutrition tray & visit to kitchen
            (items c-g constitutes 20 hours).
      4. Assessment (End of Posting)
         a) Case discussion -50%
         b) Viva on instructments and X-ray/OSCE -25%
         c) New Born -25%

COURSE CONTENT IN PEDIATRICS:
   1) Vital Statistics:
      Must know:
         ➢ Definition and overview of Paediatrics with special reference to age related disorders.
Population structure, pattern of morbidity and mortality in children.
         ➢ Maternal, perinatal, neonatal, infant and preschool mortality rates. Definition, causes,
present status and measures for attainment of goals.
         ➢ Current National programmes such as ICDS, RCH, Vitamin A prophylaxis, UIP, Pulse
Polio, ARI, Diarrhea control programme, etc.

      Desirable to know:
         ➢ Other National Programmes.
1) Growth and Development:
   **Must know:**
   - Normal growth from conception to maturity.
   - Anthropometry – measurement and interpretation of weight, length / height, head circumference, mid-arm circumference. Use of weighing machines, infantometer.
   - Interpretation of Growth Charts: Road to Health Card and percentile growth curves.
   - Abnormal growth patterns – failure to thrive, short stature.
   - Growth pattern of different organ systems such as lymphoid, brain and sex organs.
   - Normal pattern of teeth eruption.
   - Principles of normal development.
   - Important milestones in infancy and early childhood in the areas of Gross Motor, Fine motor, language and Personal-Social development. 3-4 milestones in each of the developmental fields, age of normal appearance and the upper age of normal.
   - Preventable causes and assessment of developmental retardation
   - Psychological and behavioural problems.

   **Desirable to know:**
   - Age-independent anthropometric measurement-principles and application.
   - Sexual Maturity rating.

2) Nutrition:
   **Must know:**
   - Normal requirements of protein, carbohydrates, fats, minerals and vitamins for newborn, children and pregnant and lactating mother. Common food sources.
   - Infant feeding / weaning foods, method of weaning.
   - Assessment of nutritional status of a child based on history and physical examination.
   - Protein energy malnutrition – Definition, classification according to IAP / Welcome Trust, acute versus chronic malnutrition. Clinical features of marasmus and Kwashiorkar. Causes and management of PEM including that of complications, Planning a diet for PEM.

   **Desirable to know:**
   - Definition, causes and management of obesity.
1) Immunization:
   **Must know:**
   - National Immunization Programme.
   - Principles of Immunization. Vaccine preservation and cold-chain.
   - Types, contents, efficacy storage, dose, site, route, contra-indications and adverse reactions of vaccines – BCG, DPT, OPV, Measles, MMR, and Typhoid: Rationale and methodology of Pulse Polio Immunization.
   - Investigation and reporting of vaccine preventable diseases. AFP (Acute Flaccid Paralysis) surveillance.
   **Desirable to know**
   - Special vaccines like Hepatitis B, H. influenza b, Pneumococcal, Hepatitis A, Chickenpox, Meningococcal, Rabies.

2) Infectious Diseases:
   **Must know:**
   - Epidemiology, basic pathology, natural history, symptoms, signs, complications, investigations, differential diagnosis, management and prevention of common bacterial, viral and parasitic infections in the region, with special reference to vaccine-preventable diseases: Tuberculosis, Poliomyelitis, Diptheria, Whooping cough, Tetanus including neonatal tetanus, Measles, Mumps, Rubella, Typhoid, Viral Hepatitis, Cholera, Chickenpox, Giardiasis, Amoebiasis, Intestinal helminthiasis, Malaria, Dengue fever, AIDS.
   **Desirable to know:**
   - Kala-azar, Leprosy, Chlamydia infection.

3) Hematology:
   **Must know:**
   - Causes of anemia in childhood, Classification based on etiology and morphology.
   - Epidemiology, recognition, diagnosis, management and prevention of nutritional anemia-iron deficiency, megaloblastic.
   - Clinical approach to a child with anemia with lymphadenopathy and hepatosplenomegaly.
   - Epidemiology, clinical features, investigations and management of thalassemia.
   - Approach to a bleeding child.
   - Diagnosis of acute lymphoblastic leukemia and principles of treatment.
   - Clinical features and management of hemophilia, ITP.
   - Diagnosis and principles of management of lymphomas.
   **Desirable to know:**
   - Types, clinical features and management of acute hemolytic anemia.
   - Non-thrombocytopenic pupura (Henoch-Schonlein purpura).
4) **Respiratory System:**
   **Must know:**
   - Clinical approach to a child with cyanosis, respiratory distress, wheezing. Significance of recession, retraction.
   - Etiopathogenesis, clinical features, complications, investigations, differential diagnosis and management of acute upper respiratory infections, pneumonia with emphasis on bronchopneumonia, bronchiolitis, bronchitis. Acute and chronic otitis media.
   - Etiopathogenesis, clinical features, diagnosis, classification and management of bronchial asthma. Treatment of acute severe asthma.
   - Diagnosis and management of foreign body aspiration. Differential diagnosis of stridor.
   - Pathogenesis, clinical features and management of pneumothorax, pleural effusion and empyema.
   
   **Desirable to know:**
   - Multidrug resistant tuberculosis, Bronchiectasis, pulmonary cysts.

5) **Gastro Intestinal Tract** :
   **Must know:**
   - Clinical approach to a child with jaundice, vomiting, abdominal pain, bleeding, hepatosplenomegaly.
   - Clinical features and management of acute viral hepatitis, causes & diagnosis of Chronic Liver Disease.
   - Common causes of constipation.
   - Abdominal tuberculosis.
   
   **Desirable to know:**
   - Causes, clinical features and management of Portal hypertension, Reye’s syndrome, Coeliac disease.
   - Drug induced hepatitis.

6) **Central Nervous System:**
   **Must know:**
   - Clinical approach to a child with coma, convulsion, mental retardation.
   - Clinical diagnosis, investigations and treatment of acute pyogenic meningitis, encephalitis & Tubercular Meningitis.
   - Seizure Disorder-Causes and types of convulsions at different ages. Diagnosis, categorization and management of Epilepsy (Broad outline). Febrile convulsions, definition, types, management.
7) **Cardiovascular System**:

**Must know:**
- Clinical features, diagnosis, investigation, treatment and prevention of acute rheumatic fever. Common forms of rheumatic heart disease in childhood. Differentiation between rheumatic and rheumatoid arthritis.
- Recognition of congenital acyanotic and cyanotic heart disease. Hemodynamics, clinical features and management of VSD, PDA, ASD and Fallot's tetralogy (Cyanotic spells).
- Recognition of congestive cardiac failure in children.

**Desirable to know**
- Diagnosis and management of bacterial endocarditis, pericardial effusion, myocarditis.

8) **Genito Urinary System**:

**Must know:**
- Basic etiopathogenesis, clinical features, diagnosis, complications and management of acute post-streptococcal glomerulonephritis and nephrotic syndrome.
- Etiology, clinical features, diagnosis and management of urinary tract infection – acute and recurrent.
- Etiology, diagnosis and principles of management of acute renal failure.
- Causes and diagnosis of obstructive uropathy in children.
- Diagnosis and principles of management of chronic renal failure.
- Causes and diagnosis of hematuria.

**Desirable to know:**
- Renal and bladder stones.
- Hemolytic-uremic syndrome.

9) **Endocrinology**:

**Must know:**
- Etiology clinical features and diagnosis of diabetes and hypothyroidism, hyperthyroidism and goiter in children.

**Desirable to know**
- Delayed and precocious puberty.
10) Neonatology:
Must know:
- Definition – live birth, neonatal period, classification according to weight and gestation, mortality rates.
- Delivery room management including neonatal resuscitation and temperature control.
- Etiology, clinical features, principles of management and prevention of birth asphyxia.
- Birth injuries-causes and their recognition.
- Care of the normal newborn in the first week of life. Normal variations and clinical signs in the neonate.
- Breast feeding-Physiology and its clinical management.
- Identification of congenital anomalies at birth with special reference to anorectal anomalies, tracheo-esophageal fistula, diaphragmatic hernia, neural tube defects.
- Neonatal Jaundice: causes, diagnosis, principles of management.
- Neonatal infection – etiology, diagnosis, principles of management. Superficial infections, sepsis.
- Identification of sick newborn (i.e. detection of abnormal signs – cyanosis, jaundice, respiratory distress, bleeding, seizures, refusal to feed, abdominal distension, failure to pass meconium and urine).

Desirable to know:
- Recognition and management of specific neonatal problems – hypoglycemia, hypocalcemia, anemia, seizures, necrotising enterocolitis, haemorrhage.
- Common intra-uterine infections.
- Transportation of sick neonate.

11) Paediatric Emergencies:

Must know:
- Status epilepticus.
- Status asthmaticus / Acute Severe Asthma.
- Shock and anaphylaxis.
- Burns.
- Hypertensive emergencies.
- Gastrointestinal bleed.
- Comatose child.
- Congestive cardiac failure.
- Acute renal failure

12) Fluid – Electrolyte:

Must know:
- Principles of fluid and electrolyte therapy in children
- Pathophysiology of acid-base imbalance and principle of management.
13) Genetics:

Must know:
- Principles of inheritance and diagnosis of genetic disorders.
- Down’s syndrome.

14) Behavioral Problems:

Must know:
- Breath holding spells, nocturnal enuresis, temper tantrums, pica.

15) Paediatric Surgical Problems:

Must know:
- Diagnosis and timing of surgery of Cleft lip / palate, hypospadias, undescended testis, tracheo-esophageal fistula, hydrocephalus, CTEV, Umbilical and inguinal hernia, anorectal malformations, hypertrophic pyloric stenosis.

16) Therapeutics:

Must know:
- Paediatric doses, drug combinations, drug interactions, age specific choice of antibiotics etc.,

Suggested Topics for Integrated Seminars

1. Convulsions including status epilepticus
2. Coma
3. PUO
4. Jaundice
5. Portal hypertension
6. Respiratory failure
7. Shock and anaphylaxis
8. Rheumatic Heart Disease
10. Diabetes mellitus
11. Hypothyroidism
12. Anemia
13. Bleeding
14. Renal failure
15. Tuberculosis
16. Malaria
17. HIV infection.
18. Poliomyelitis and AFP surveillance.
19. Perinatal asphyxia (with obstetrics)
20. Intrauterine growth retardation (with obstetrics)
List of Tutorials

1. Protein energy malnutrition.
2. Rickets.
3. Acute Diarrhea including fluid therapy.
4. Persistent Diarrhea.
5. Hepatosplenomegaly and splenohepatomegaly.
6. Hemolytic anemia and other anemias.
7. Bleeding child.
8. Leukemia.
10. Congenial heart disease. (left to right shunt and right to left shunt).
11. Rheumatic Heart disease.
13. Acute glomerulonephritis.
15. Bronchial asthma (respiratory distress).
17. Bronchopneumonia.
18. Rash.
19. Meningitis.
20. Hemiparesis.
21. Monoparesis including acute flaccid paralysis.
22. Mental retardation (Preventable and cerebral palsy).
23. Epilepsy and febrile convulsions.
24. Hydrocephalus.
26. Low birth weight babies.
27. Preterm babies.
29. Neonatal septicemia.
30. Newborn resuscitation.

List of usual Clinical Cases to be Covered

1. Normal New born
2. Normal development in a child.
3. Low birth weight babies
6. Neonatal Respiratory distress
8. Malaria and Typhoid Fever
9. Immunization.
10. Adolescent growth and disorders of puberty
11. Common exanthematous illness
12. Infant Feeding.
13. Xerophthalmia & Rickets.
14. Protein energy malnutrition.
15. Fluid and electrolyte imbalance.
16. Acute diarrhea
17. Persistent diarrhea
18. Chronic liver disease
20. Acute flaccid paralysis
21. Cerebral palsy & mental retardation.
22. Leukemias
23. Hemolytic anemias & Thalassemia
24. Bleeding and coagulation disorders
27. Nephrotic Syndrome.
28. Rheumatic fever and heart disease
30. Congenital heart disease
31. Congestive heart failure
32. Meningitis
33. Bronchial asthma
34. Behavioural Disorders
35. Childhood tuberculosis.

**Suggested List of Instruments And X-Rays**

- **List of Instruments:**
  - Lumbar puncture needle
  - Liver biopsy needle
  - Bone marrow aspiration
  - Intravenous Cannula
  - Ryles tube
  - Emergency drugs
  - Ambu bag and mask
  - Tongue depressor
  - Tuberculin syringe
  - Endotracheal tube
  - Laryngoscope
  - Vaccines.

- **List of X-rays:**
  - Pneumonia, primary complex – hilar and parahilar lymphadenopathy, military tuberculosis, obstructive emphysema, Pleural effusion, pneumothorax, normal thymus, primary complex, Congenital heart disease, increased and decreased pulmonary vascularity, cardiomegaly, Rickets, Scurvy, Hemolytic anemia, skull (sutural seperation, enlarged sella and raised intracranial tension).

**RECOMMENDED BOOKS**
1. IAP Text Book of Pediatrics.
2. Essential Pediatrics by O.P.Ghai.
3. Text Book of Neonatology by Meharban Singh.
5. Clinical methods in Pediatrics by Meharban Singh

**Reference Books:**
Text Book of Pediatrics by Nelson.
(3) GENERAL SURGERY (including Paediatric Surgery)

(i) Goal:

The broad goal of the teaching of undergraduate students in Surgery is to produce graduates capable of delivering efficient first contact surgical care.

(ii) Objectives:

(a) KNOWLEDGE:

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

(1) Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children;

(2) define indication and methods for fluid and electrolyte replacement therapy including blood transfusion;

(3) define asepsis, disinfection and sterilization and recommend judicious use of antibiotics;

(4) describe common malignancies in the country and their management including prevention;

(5) enumerate different types of anaesthetic agents. Their indications, mode of administration, contraindications and side effects.

(b) SKILLS:

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

(1) Diagnose common surgical conditions both acute and chronic in adult and children;

(2) plan various laboratory tests for surgical conditions and interpret the results;

(3) identify and manage patients of haemorrhagic, septicaemic and other types of shock;

(4) be able to maintain patent air-way and resuscitate;

(i) a critically injured patient;

(ii) patient with cardio-respiratory failure;

(iii) a drowning case;

(5) monitor patients of head, chest, spinal and abdominal injuries, both in adults and children.

(6) Provide primary care for a patient of burns;

(7) Acquire principles of operative surgery, including preoperative operative and postoperative care and monitoring;

(8) Treat open wounds including preventive measures against tetanus and gas gangrene;

(9) Diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary / tertiary centres;

(10) Identify congenital anomalies and refer them for appropriate management.
In addition to the skills referred above in items(1) to (10), he shall have observed /assisted /performed the following:

1. Incision and drainage of abscess;
2. Debridement and suturing open wound;
3. Venesections;
4. Excision of simple cyst and tumours;
5. Biopsy of surface malignancy;
6. Catheterisation and nasogastric intubation;
7. Circumcision;
8. Meatoctomy;
9. Vasectomy;
10. Peritoneal and pleural aspirations;
11. Diagnostic proctoscopy;
12. Hydrocele operation;
13. Endotracheal intubation;
14. Tracheostomy and cricothyroidotomy;
15. Chest tube insertion

(c) INTEGRATION:
The undergraduate teaching in surgery shall be integrated at various stages with different pre and para and other clinical departments

THEORY SYLLABUS IN SURGERY:

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<tr>
<th>Sl.No.</th>
<th>Name of the unit</th>
<th>No.of Hours</th>
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<tbody>
<tr>
<td>1.</td>
<td>Wounds-closed and open, wound-healing and management.</td>
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<td>2.</td>
<td>Hemorrhage and shock</td>
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<td>3.</td>
<td>Fluid and Electrolyte balance &amp; Acid-Base Balance.</td>
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<td>4.</td>
<td>Blood transfusion</td>
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<td>5.</td>
<td>Pyogenic infections – Local, diffuse and septic</td>
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<td>6.</td>
<td>Common clinical lesions – swelling, ulcer etc.,</td>
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<td>7.</td>
<td>Thermal injuries, burns, electrical injuries;</td>
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<td>8.</td>
<td>Ulceration and Gangrene: Simple non-specific ulceration, acute and</td>
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<td>chronic ulcers, skin grafting, gangrene, threatened, dry and moist,</td>
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<td>vascular, infective, traumatic and toxic gangrene</td>
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<td>9.</td>
<td>Chemotherapy: Definition, Sulphanamide group penicillin, Streptomycin and the</td>
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<td>newer antibiotics, principles of radiation.</td>
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10. Diseases of the skin; Boils, Carbuncles, Impetigo, Tuberculosis, Infections, Growth, Cysts and Sebaceous Glands, Nails;

11. Infections of the Fingers and hand: Anatomy, Prophylaxis The distal Segment of the fingers, Tenosynovitis, Abscess in the palm, Lymphangitis


14. Diseases of the Mouth Palate, Lips, Cheek, Tongue, Teeth, Gums jaws – Salivary glands, Maxillofacial injuries, Tumours of jaw and mouth

15. Anatomy of oesophagus, stomach, small and large bowel and anal canal (including vermiform appendix Peritoneum, congenital anomalies) Diseases affecting them with emphasis on cancer colon and volvulus of sigmoid – Specimens of Cancer colon and Ileocaecal TB. & Colostomy
   a) Anorectal suppuration
   b) Haemorrhoids internal and external
   c) Ulcers and Tumours of Anal Canal
   d) Rectum – Specimens of cancer Rectum

16. Thyroid – surgical anatomy, Physiology Classification of goitres, thyrotoxicosis, tumours and surgery – specimens and slides of Thyrotoxicosis, Carcinoma and Colloid goitre.

17. Parathyroid & Adrenal glands. Breast _ Surgical Anatomy, Physiology, Diseases and Surgery; specimens and slides of Fibroadenoma and Carcinoma

18. Hernias

19. Penis – Ulcers and tumors of penis

20. Anatomy of abdominal wall – ventral hernia- Abdominal incision and Mc. Burney’s point
   b) Anatomy of inguinal canal and inguinal hernia- Bassinis’ operation.
   c) Other types of Hernia

22. Anatomy and diseases of liver
   a. Abscess
   b. Tumours
   c. Specimens of Hydatid cyst and liver abscess.
   d. Cholecystitis and cholelithiasis- Specimens of Cholecystitis and gall stones.
   e. Surgical Jaundice
   f. Pancreatitis, Pancreatic Calculi and tumours
   g. Spleen
   h. Testis
23. Thorax and chest injuries.
24. Urinary symptoms, investigations of urinary tract
26. Cranium, spinal cord, Peripheral nerves and Head injuries.

OPERATIVE SURGERY:

1. Sepsis and Antisepsis
2. Sterilization –Methods
4. Surgical anatomy of neck with block dissection

Demarcation of syllabus for University Exam paperwise:-

**Paper-I** : Units 1 to 14
**Paper-II** : Units 15 to 26.

**Recommended Books:**
1. Short Practice of Surgery by Bailey & Love.
2. Principles of Surgery by Schwartz
3. Text Book of Surgery by Sabiston
4. Text Book of Surgery by Das
5. Manual of Clinical Surgery by Das K.
6. Practical guide to operative Surgery by Das S.
7. Current Surgical Diagnosis & Treatment by Lawrence.
8. Demonstration of Physical signs in Clinical Surgery by Hamilton Bailey.
# III rd PROFESSIONAL - PART – II SYLLABUS

## 4) ORTHOPAEDICS & TRAUMATOLOGY

**i) Theory Syllabus**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>CHAPTER</th>
<th>No. of Hours</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>ORTHOPAEDICS : GENERAL</td>
<td>2</td>
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<td>2.</td>
<td>CONGENITAL DEFORMITIES:</td>
<td>2</td>
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<td>3.</td>
<td>DEVELOPMENTAL DISORDERS OF BONES:-</td>
<td>2</td>
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<tr>
<td>4.</td>
<td>INFECTIONS OF BONES AND JOINTS:</td>
<td>3</td>
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<tr>
<td>5.</td>
<td>BONE AND JOINT TUBERCULOSIS:</td>
<td>4</td>
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<td>6.</td>
<td>GENERALISED DISEASES OF BONES:</td>
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<td></td>
<td>Rickets-Osteoporosis-Parathyroid Osteodystrophy- Paget’s disease-Fluorosis.</td>
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<td>7.</td>
<td>DISEASES OF JOINTS :</td>
<td>1</td>
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</table>
8. AVASCULAR NECROSIS OF BONE AND EPICYHELAL OSTEOCHONDRTIS:
   Definition- Pathogenesis- Clinical features- Radiological staging,
   Epiphyseal osteochondritis -Perthes desease- Osgoold Sch letter’s
disease.

9. TUMORS OF BONE
   Osteoid osteoma-Osteoma- Osteochondroma- Aeurysmal bone cyst-
   osteosarcoma- Gaint cell tumour – Chondroblastoma- Ewing’s Sarcoma
   Plasmacytoma Bone metastasis.

10. NEUROLOGICAL AND MUSCULAR DISORDERS :
    Cerebral Plasys- Types – Treatment – Anterion ploiomyelitis – stages
    Management – Physiotherapy.

11. REGIONAL CONDITIONS OF NECK AND UPPER LIMP :
    Spondylosis – Cervical rib – Torticollis – Pariarthritis shoulder Tennis
    elbow – Cubitus varus – Ganglion – De quervain’s diseases- Trigger finger
    – carpal tunnel syndrome – Depuytren’s contracture.

12. REGIONAL CONDITIONS OF THE SPINE AND LOWER LIMP:
    Spondylolithesis – Fibrositis back – Hip clinical Examination- Coxa vara –
    Genu valgum – Genu varum- Recurrent dislocation of patella- Plantar
    Fascitis.

13. PHYSICAL MEDICINE AND REHABILITATION:
    Definitions – Rehabilitation- Medical Rehabilitation- Physical Medicine-
    Massage therapy – Exercise therapy- Hydrotherapy – Electrotherapy –
    Short wave diathermy- Ultrasound therapy- Laser therapy – Lower limb
    prosthesis – Upper limb prosthesis.

14. INJURIES TO BONES AND JOINTS :- GENERAL
    Fractures – Types of fractures – Mechanism of fracture – Biology of
    fracture healing – Factors which influence fracture healing- General
    Principles of management of fractures- Diagnosis- Conservative
    management – Functional Cast Bracing – Open reduction and internal
    fixation. Complications of Fractures.

15. INJURIES OF THE SHOULDER AND ARM:
    SHOULDER: Fracture clavicle – Injuries of the Acromio Clavicular joint –
    Dislocation of the shoulder joint –Recurrent dislocation of shoulder.
    The arm – fracture of the Proximal end of humerus- Fracture neck of
    humerus –Fracture of the shaft of the humerus.
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<tr>
<th>Sl. No.</th>
<th>CHAPTER</th>
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<tr>
<td>16.</td>
<td>INJURIES OF ELBOW, FOREARM AND WRIST</td>
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<td>17.</td>
<td>INJURIES OF THE HAND :</td>
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<td>INJURIES OF THE HIP AND THIGH:</td>
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<td>19.</td>
<td>INJURIES OF THE KNEE, LEG :-</td>
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<td>The Knee :- Fracture patella The Leg :- Fracture of Tibia and Fibula.</td>
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<td>20.</td>
<td>INJURIES OF THE ANKLE AND FOOT :-</td>
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<td>The Ankle – Fracture and fracture dislocation of the ankle Epiphseal injury lower end Tibia. The foot : - Fractures of the talus- Fracture of the calcaneum- fractures of the metatarsals and phalanges.</td>
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<td>INJURIES OF THE SPINE :</td>
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<td>FRACTURES OF THE PELVIS:</td>
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<td>Fractures of the Pelvis – Mechanism – Classification - Management – Fracture of the acetabulum- Fracture of the Sacrum and Coccyx.</td>
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<td>23.</td>
<td>POLY TRAUMA</td>
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<td>24.</td>
<td>COMPOUND FRACTURES:</td>
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<td>25.</td>
<td>SOFT TISSUE INJURIES INCLUDING SPORTS INJURIES:</td>
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<td>Injuries to ligaments: Cruciate ligament injuries- injuries to Semilunar cartilage.</td>
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<td>26.</td>
<td>NERVE INJURIES:</td>
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**Recommended Books:**
- Text Book of Orthopaedics and Traumatology by Natarajan.
- Text Book of Orthopaedics by Maheswari
- Outlines of Orthopaedics by Adams.
- Outlines of Fractures by Adams.
- Clinical Orthopaedics Examination by Mc.Rae.
- Text book of Orthopaedics by Dr.C.Vyaghreswarudu.
III rd PROFESSIONAL - PART – II SYLLABUS

5. OBSTETRICS AND GYNAECOLOGY:

Obstetrics and Gynaecology to include family welfare and family planning.

(i) Goal:

The broad goal of under graduate students in obstetrics and Gynecology is that he/she shall acquire understanding of anatomy, physiology and pathophysiology of the reproductive system and gain the ability to optimally manage common conditions affecting it.

(ii) Objectives:

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

1. Outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it;
2. Detect normal pregnancy labour puerperium and manage the problems he/she is likely to encounter therein;
3. List the leading causes of maternal and perinatal morbidity and mortality;
4. Understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilisation and their complications;
5. Identify the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post menopausal periods;
6. Describe the national programme of materi al and child health and family welfare and their implementation at various levels;
7. Identify common gynecological diseases and describe principles of their management;
8. State the indications, techniques and complications of surgeries like Caesarian section, laprotomy, abdominal and vaginal hysterectomy, Fothergill’s operation, and vacuum aspiration for Medical Termination of Pregnancy (MTP).

THEORY SYLLBUS:
SYLLABUS OF OBSTETRICS:

1) Anatomy of the Genital Tract
2) Physiology of the Genital Tract
3) Anatomy of the Peivis
4) Anatomy of the Foetal Skull
5) Maturation & Fertilisation of ovum
6) Development of Placenta
7) Endocrinology of Placenta
8) Diagnosis of Pregnancy.
9) Signs & Symptoms of Pregnancy.
10) Physiological Changes in Pregnancy.
11) Fetal Physiology
12) Physiology of Labour
13) Physiology of Puerperium.
14) Breast, Lactation.
15) Abortion
16) Ectopic Gestation.
17) Trophoblastic Tumors
   a) Mole            b) Choriocarcinoma
18) Anatomy of Pelvic Floor
19) Physiology of Menstruation.
20) Development of Genital Organs
21) Gynaecological Diagnosis
22) Physiology of Menopause
23) Abnormalities of Menstruation.
24) S.T.D. & HIV
25) Leucorrhoea
26) Hyperemesis
27) PIH
28) Eclampsia
29) Heart Disease complicating Pregnancy
30) Anaemia complicating Pregnancy
31) Rh incompatibility
32) Face, Brow Presentation
33) Occipitoposterior
34) Transverse lie
35) Breech
36) Multiple Pregnancy
37) Abnormal Labour
38) Bad Obstetric history
39) Cephalopelvic disporportion
40) Illrd stage complication
41) Induction of Labour
42) Rupture Uterus
43) Obstructed Labour
44) Caesarean Section
45) Post Caesarean Pregnancy
46) Peurpereal Sepsis
47) Intra Uterine Growth Retardation
48) Ultrasonography & Radiology
49) Social obstetrics
50) Neonatology

**FAMILY PLANNING:**

1. Anatomy of Pelvic Floor
2. Contraception
   A. Temporary Methods
      a. Barrier
      b. IUCD
      c. Hormonal – Oral, Injectable, Implants,
   B. Permanent
      a. Tubectomy – Minilap, Peurperial sterilization, Laparoscopic sterilization
      b. Vasectomy & N.S.V
      c. Recanalisation – Fallopian tube, Vas
      d. Counselling
3. Antenatal Care
4. Anaemia Complicating Pregnancy
5. Pregnancy Induced Hypertension(PIH)
6. Antepartum Hemorrhage

**GYNAECOLOGY**

1. Genital Tract Anomalies
2. Infertility
3. Anomalies of uterus
4. Endometriosis
5. Amenorrhoea
6. Dyfunctional uterine bleeding
7. Post Menopausal Bleeding
8. pelvic Inflammatory disease
9. genital T.B.
10. Genital Fistulae
11. Stress incontinence
12. Trophoblastic disease
13. Prolapse Uterus
14. Retroversion & Chronic inversions of Uterus
15. Gynaecological Oncology
- Cancer Cervix
- Cancer Breast
- Cancer Body of uterus
- Cancer Vulva
- Cancer ovary
16. Endoscopy
17. Chemotherapy & Radiotherapy
18. Medical Termination of Pregnancy
19. Hormones in Gynaecology
20. Inter sex

TOPICS FOR INTEGRATED TEACHING
1. Anaemia complicating pregnancy
2. Hypertension complicating Pregnancy
3. diabetes complicating Pregnancy
4. Heart disease complicating pregnancy
5. T.B. Asthma complicating Pregnancy
6. Hepatitis complicating pregnancy
7. STD complicating pregnancy
8. HIV complicating pregnancy
9. Acute Surgical Emergencies
10. Acute Renal failure
11. Acute abdomen in immediate post operative period.

* Recommended Text Books:
  1. Shaw’s text book of Gynaecology by Dr.Daftari & V.Pdubeidri
  2. Text book of Obstetrics – by Dr.DL.Dutta
  3. Text Book of Gyanecology – by Dr.D.C.Dutta.
  4. Text Book of Obstetrics – Dr.C.S.(Dawn)
  5. Text Book of Gynaecology – Dr.C.S.Dawn
  7. Manual of Obstetrics – Dr.Sirish Daftary
  8. Text Book of Obstetrics – by Mudaliar
  9.

* Reference Books:
  1. Williams – Obstetrics.
  2. Jeffcoetes Gynaecology
  3. Practical Obstetrics by landonala
  4. Fertility control by Dr.Chand
  5. Post graduate obstetrics & Gynaecology ol-I & II by Dr.Ratnam & Dr.Arul Kumaran
  Management of labour – Dr.Arul Kumaran.

Paper – I
  • Obstetrics including social obstetrics.

Paper - II
  • Gynaecology family welfare and Demography
# SCHEDULE OF CLINICAL POSTINGS FROM 3RD TO 9TH SEMETERS

<table>
<thead>
<tr>
<th>Total Subject</th>
<th>3rd Semester (Weeks)</th>
<th>4th Semester (Weeks)</th>
<th>5th Semester (Weeks)</th>
<th>6th Semester (Weeks)</th>
<th>7th Semester (Weeks)</th>
<th>8th Semester (Weeks)</th>
<th>9th Semester (Weeks)</th>
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<td>General Medicine***</td>
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<td>Tuberculosis and Chest Diseases</td>
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<td>Skin and STD</td>
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<td>General Surgery***</td>
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<td>Obstetrics and Gynaecology including Family Welfare</td>
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<td>20</td>
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<td>20</td>
<td>18</td>
<td>20</td>
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</table>
Clinical methods in Medicine and Surgery for whole class will be for 2 weeks each respectively at the start of 3rd semester.

* This posting includes training in Radiodiagnosis and Radiotherapy where existent.
** This posting includes exposure to Rehabilitation and Physiotherapy.
*** This posting includes exposure to laboratory medicine and infectious diseases.
**** This posting includes exposure to dressing and Anaesthesia
***** This posting includes maternity training and Family medicine and the 3rd semester posting shall be in Family welfare planning.

SUGGESTED MODEL TIME TABLES:

Following minimum teaching hours are prescribed in various disciplines

<table>
<thead>
<tr>
<th><strong>A. PRE CLINICAL SUBJECTS :-</strong></th>
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<tbody>
<tr>
<td>(Phase - I First &amp; Second Semesters)</td>
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<tr>
<td>Foundational Course stage - I</td>
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<tr>
<td>Anatomy</td>
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<tr>
<td>Physiology</td>
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<td>Biochemistry</td>
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<td>Community</td>
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<tr>
<th><strong>B. PARA CLINICAL SUBJECTS :-</strong></th>
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<tbody>
<tr>
<td>(Phase – II Third to Seventh Semesters)</td>
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<tr>
<td>Foundational course stage - II</td>
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<tr>
<td>Pathology</td>
<td>300 Hrs</td>
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<tr>
<td>Pharmacology</td>
<td>300 Hrs</td>
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<tr>
<td>Microbiology</td>
<td>250 Hrs.</td>
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<tr>
<td>Community Medicine</td>
<td>200 Hrs.</td>
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<td>(Including 8 weeks posting of 3 hrs. each )</td>
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<tr>
<td>Forensic Medicine</td>
<td>100 Hrs</td>
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</table>

Teaching of paraclinical subjects shall be 4 hours per day. In 3rd Semester and 3hrs. per day in 4th and 5th Semesters (See attached time table).

<table>
<thead>
<tr>
<th><strong>C. CLINICAL SUBJECTS :-</strong></th>
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<tbody>
<tr>
<td>(Phase – II and III – 3rd to 9th Semesters)</td>
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<tr>
<td>1. Clinical postings as per chart attached.</td>
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</tr>
<tr>
<td>2. Theory lectures, demonstration and Seminars etc., in addition to clinical postings as under the clinical lecturers to be held from 4th semester onwards (See attached Time Table)</td>
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</table>
Gen.Surgery    300 Hrs
Gen.Medicine    300 Hrs
Paediatrics     100 Hrs
Pulmonary Diseases    20 Hrs
Psychiatry        20 Hrs
Skin and STD      30 Hrs
Community Medicine 50 Hrs
Anaesthesia including
  Emergency medicine 20 Hrs
Orthopaedics      100 Hrs
Ophthalmology    100hrs.
E.N.T.            70 Hrs
Radiology        20 Hrs.
Dentistry        10 Hrs.
Obst & Gynaec.    300 Hrs.

**NOTE**: This period of training is the minimum suggested. Adjustments where required depending on availability of time be made.

This period of training does not include university examination period.
Extra time available be devoted to other sub – specialties

During semesters 3 to 9 clinical posting of 3 hours duration is suggested for various departments after introductory course in clinical methods in medicine and surgery of two weeks each, for the whole class.
MODEL TIME TABLE

(Subject to modifications as per local situation).

Phase-I
First Semester:

<table>
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<tr>
<th>Days Time</th>
<th>8-9</th>
<th>9-10</th>
<th>10-11</th>
<th>11-12</th>
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### Phase-I
#### Second Semester:

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<th>9-10</th>
<th>10-11</th>
<th>11-12</th>
<th>12-1</th>
<th>1-2</th>
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NOTE: Community Medicine lecture be arranged in consultation with other preclinical departments in the above timings.
## Phase-II

Third Semester:

<table>
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<th>Days Time</th>
<th>8-9</th>
<th>9-10</th>
<th>10-11</th>
<th>11-12</th>
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<tr>
<td>Mon</td>
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<td>Para Clinical lectures</td>
<td>Clinical Postings</td>
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## Phase-II
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PHASE-III

Sixth, Seventh, Eight & Ninth Semesters:

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Note: These are suggested time tables, Adjustments where required, depending upon the availability of time and facility be made.
1. (1) This Act may be called the Andhra Pradesh Prohibition of Ragging Act, 1997.
(2) It extends to the whole of the State of Andhra Pradesh.
(3) It shall be deemed to have come into force with effect from 4th July.

2. In this act, unless the context otherwise requires:
   a) 'act' includes words either spoken or written or signs or sounds or gestures of visible representations;
   b) 'Educational Institution' means and includes a college, or other institution by whatever name called, carrying on the activity or imparting education therein (either exclusively or among other activities); and includes an orphanage or boarding home or hostel or tutorial institution or any other premises attached thereto.
   c) 'government' means the State Government of Andhra Pradesh.
   d) 'notification' means the notification published in the Andhra Pradesh Gazette and the word 'notified' shall be construed accordingly;
   e) 'ragging' means doing an act which causes 'or is likely' to cause insult or annoyance of fear or apprehension or threat or intimidation or outrage of modesty' or injury to a student.
   f) 'student' means a person who is admitted to an educational institution. And whose name is lawfully borne on the attendance register thereof;
   g) All words and expressions used but not defined in this Act shall have the meanings assigned to them under the Andhra Pradesh Education Act, 1982 or Indian Penal Code, 1860 respectively.
3. Ragging within or outside any educational institution is prohibited.

4. Whoever, with the intention of causing ragging or with the knowledge that he is likely by such act to cause ragging, commits or abets ragging and thereby:
   i. teases or embarrasses or humiliates a student shall be punished with imprisonment for a term which may extend to six months or with fine which may extend to one thousand rupees or with both; or
   ii. assaults or uses criminal force to or criminally intimidates, a student shall be punished with imprisonment for a term 'which' may extend to one year or with fine which may extend to two thousand rupees or with both; or
   iii. wrongfully restrains or wrong fully confines or causes hurt to a student shall be punished with imprisonment for a term which may extend to two years or with fine which may extend to five thousand rupees or with both; or
   iv. causes grievous hurt to or kidnaps or abducts or rapes or commits unnatural offence with a student shall be punished with imprisonment for a term 'which' may extent to five years and with fine which may extend to ten thousand rupees; or
   v. causes death of abets suicide shall be punished with imprisonment forlife or with imprisonment for a term which may extend to ten years and with a fine which may extend to fifty thousand rupees.

5. (1) A student convicted of an offence under section 4 and punished with imprisonment for a team shall be dismissed from the educational instittion. Dismissal of student.

      (2) A student convicted of an offence under section 4 and punished with imprisonment for a term of more than six months shall not be admitted in any other educational institution.

6. (1) Without prejudice to the fore going provisions, whenever any student complains of ragging to the head or manager of an educational institution, such head or manager shall inquire into or cause an inquiry to be made into the same forthwith and if the complaint is prima-facie found true, shall Suspend the student or students complained against for such period as may be deemed necessary. Suspension of student.

      (2) The decision of the head or manager of the educational institution under sub section (1) shall be final.
7. (1) If the head or the manager of an educational institution fails or neglects to take action in the manner specified in sub-section (1) of section 6, such person shall be deemed to have abetted the offence and shall be punished with the punishment provided for the offence. (2) If a student commits suicide due to or in consequence of ragging, the person who commits such ragging shall be deemed to have abetted such suicide.

8. The provisions of this Act shall be in addition to and not derogatory of any law for the time being in force.

9. (1) The Government may by notification, make rules for carrying out all or any of the purposes of this Act. (2) Every rule made under this Act shall immediately after it is made, be laid before the Legislative Assembly of the State, if it is in session and if it is not in session, in the session immediately following for a total period of fourteen days which may be comprised in one session or in two successive sessions, and if, before the expiration on the session in which it is so laid or the session 'immediately following the Legislative Assembly agrees in making any modification in the rule or in the annulment of the rule, the rule shall, from the date on which the modified form or shall stand annulled as the case may be so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

10. The Andhra Pradesh Prohibition of Ragging Ordinance, 1997 is hereby Repealed.

G.BHAVANI PRASAD,
Secretary to Government,
Legislative Affairs & Justice,
Law Department.
STANDING ORDERS ON PUNISHMENT FOR USE OF UNFAIR MEANS.

1. During the University examination if a candidate is found in malafide possession of papers, books or notes or written notes on his clothes, body or table or chair, which is relevant to the examination(s) he will be disqualified from appearing in any university exam for one year and if found having copied will be disqualified for two years.

2. If a candidate is found talking to another candidate or person inside or outside the examination hall without permission even after a warning before, his answer book for that particular paper shall be cancelled.

3. If a candidate shows his / her answer book to another candidate or if he receives or attempts to receive help from any source, including consulting books, notes or papers or any other matter outside the exam hall or has given help or attempted to give help, he / she shall be disqualified from appearing in any university exam for two years.

4. If a candidate swallows or attempts to swallow a note or paper or runs away with the paper or causes disappearance or destruction of any such material (s), he shall be disqualified for two years.

5. If a candidate writes even a question or anything concerned either on blotting paper, or any other piece of paper including question paper or hall ticket, or attempts to pass on question paper or part there of he / she shall be disqualified for that examination.

6. If a candidate exchanges his / her seat or writes the registered number of another candidate on his / her answer book or creates any disturbance during the examination or refuses to obey the supervisory staff, he / she will be disqualified for three years.

7. If a candidate is found guilty of smuggling in or out or of replacing answer book or additional sheet during or after the exam with or without the connivance of any staff he / she shall be disqualified for three years and shall be liable to any punishment decided by Vice-Chancellor.

8. If a candidate takes way the answer book outside the examination hall or intentionally tears off or otherwise disposes his answer book or any part there of or additional sheet, he / she shall be disqualified for two years.

9. If a candidate is found guilty of serious misconduct in the examination hall or of misbehaviour towards the supervisory staff even outside the examination hall or any other place during the period, the examination is being held he / she be disqualified for a period upto five years.

10. If a person impersonates a candidate, he / she be disqualified from appearing for any university exam for five years and if he is not on university rolls, will not be admitted to any course for five years and the case may be reported to police, the candidate who is impersonated also will be disqualified for 5 years.
11. Chief superintendents and Assistant Superintendents who have reasons to suspect misconduct on the part of any candidate of candidates should forth with make all possible preliminary investigation and communicate with the registrar immediately forwarding all material evidence available together with the answer-book and the written explanation of the candidate. All such communications shall be sent by registered post acknowledgement due on the same day addressed to the registrar by name. In all such chief cases of a suspected nature, the superintendents may use their discretion and decide whether the candidate in question shall be permitted to continue sitting for the rest of the examination or not the decision shall be reported to the registrar.

12. In all cases where the evidence is such as will leave no doubt in regard to the misconduct or when the candidate is caught redhanded, as it were, the candidate or the candidate involved shall be sent out of the hall forthwith and kept out from the rest of the examination, but before the candidate leaves premises, his / her explanation shall be taken in writing and forwarded to the Registrar along with the report setting forth in detail all the material evidence.

13. In the case of the person who commits an offence under any of these rules but is not a candidate for any university examination, the chief superintendent may handover the case to the police.

14. In the case of a teacher or a person connected with an institution, who commits an offence, under any of these rules, his conduct shall be reported to the managing body of the institution, and to the government in the case of Government Institution, and shall be debarred from any remunerative job in the university permanently or for such period as the vice-chancellor may decide and also liable for such disciplinary action as may be decided by the University and the management of the college should abide by the decision of he University.

15. In case the candidate refuses to give a statement he is not to be forced to do so, only the fact of his refusal shall be recorded by the superintendent and attested by two other members of the supervisory staff on duty at the time of occurrence and such candidates are liable for punishment for a period of 3 years.

16. A candidate guilty of communicating or attempting to communicate directly or through a relative, guardian or friend with an examiner or with the Registrar or any functionary involved in the conduct of examination or publication of results with the object of influencing him in the award of marks shall be disqualified from passing that examination and the one following it.

17. A candidate found guilty of approaching or influencing directly or indirectly regarding his unfair means case, a member of the committee or any University Official, shall be disqualified for one year in addition to the punishment awarded to him under the rules for her / his offence and for using unfair means.
18. Where a candidate alleged to have employed unfair means has not been awarded any opportunity to explain the misconduct of which he / she is reported to be guilty, the Registrar, or an officer authorized by him in this behalf, shall call upon the candidate to show cause why action should not be taken against him for his misconduct. If the candidate fails to do so within 15 days of the issue of such notice the university shall proceed with the case.

19. If the Executive Council is satisfied after enquiry that the integrity of a University Examination has been violated at an examination center, as a consequence of wholesale unfair assistance rendered to examinees, the Executive Council may order re-examination besides taking action under rules relating to unfair means and may also abolish the examination center for future or for a specified period.

20. For a case of unfair means not covered by these rules, the Executive Council may on the recommendation of the committee impart any such punishment as they deem fit accordingly to the nature of the offences.

Addition to the Standing orders of the Executive Council on punishment for use of unfair means:

1. One invigilator for every 20 candidates shall be appointed. However, there will be at least two invigilators in a room irrespective of number of candidates. Care should be taken not to keep the same invigilator in the same room and for same numbers everyday. The invigilators should report to the Chief Superintendent at least 20 minutes before the commencement of examination. They are under the control of Chief Superintendents during the period they are on such duty. They should not leave the examination hall without the permission of the Chief Superintendent.

2. Examination shall start exactly at 9.00 AM. Candidates should be in their seats 15 minutes before the schedule commencement of the examinations i.e., 8.45 AM. The answer books should be distributed ten minutes prior to the commencement of the examination i.e., 8.50 AM and all entries should be made and checked by 9.00 AM.

3. No candidate should be permitted to enter the examination hall after the commencement of examination i.e., 9.00 AM. No candidate shall be permitted to leave the exam hall earlier than half an hour before the completion of time of the exam.

4. Pagers, Cellular Phones or any other gadgets are strictly prohibited in the college premises during the examination days especially in examination hours by the students, House Surgeons and staff. The Principal should circulate this information widely. Further, the Principal, Chief Superintendents and observers are to be empowered to seize such articles and shall initiate disciplinary action under intended malpractice.
5. There shall not be any overwriting in the registered number and if there is any correction, it should be attested by the Chief Superintendent.

6. To affix Cellophone tape on the Regd.No. after it is entered in the column provided on the answer script (as is done for bank draft etc) by the concerned invigilator before the papers are collected.

7. To fix individual independent accountability on the invigilator, the Attendance sheet system should be introduced. The Attendance sheet contains the name of the invigilator with his / her signature and the list of the Regd.Nos. allotted to the invigilator for supervision. Against the Regd.No. the serial no. of the booklet No. and No. of additional sheets taken should be noted. They should be signed by the candidates. The invigilator also must sign in the last column as acknowledgement of having received the answer script from the candidate. The format of the Attendance sheet is enclosed.

8. When the time is over, all answer books must be collected immediately and the candidates should not be allowed to leave the room without handing over the answer books. The invigilators are responsible for the safe delivery of the answer books of the candidates under their charge to the Chief Superintendent after the examination is over and as such they should taken proper precautions for the same.

9. No staff member except Head of the Department of the concerned subject or officially authorized person in place of HOD should be permitted to the examination hall to verify the question paper.
MEDICAL ETHICS

A. CODE OF MEDICAL ETHICS

1) Character of Physician:
   (Doctors with qualification of MBBS or MBBS with PG degree / diploma or with equivalent qualification in any medical discipline)
   A physician shall uphold the dignity and honour of his profession. The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. A Physician should be an upright man, instructed in the art of healings. He shall keep himself pure in character and be diligent in caring for the sick; he should be modest, sober, patient, and prompt in discharging his duty without anxiety.
   No person other than a doctor having qualification recognized by Medical Council of India and registered with Medical Council of India / State Medical Council(s) is allowed to practice Modern system of Medicine or Surgery.

2) Maintaining good medical practice:
   The principal objective of the medical profession is to render service to humanity with full respect for the dignity of profession and man. Physicians should merit the confidence of patients, rendering to each a full measure of service and devotion. Physicians should try continuously to improve medical knowledge and skills and should make available to their patients and colleagues the benefits of their professional attainments. The responsibilities of the physician extend not only to individuals but also to society. For advancement of his profession he should associate with associations/societies and participate in meetings /CME etc.

3) Maintenance of Medical records:
   Every physician shall maintain the medical records for a period of 3 years from the date of commencement of the treatment as per standard format supplied by M.C.I. If any request is made for medical records either by the patients / authorized attendant or legal authorities involved may be duly acknowledged and shall be issued within 72 hours.
   A registered medical practitioner shall maintain a Register of Medical Certificates and enter the identification marks, record the signature / thumb mark of the patient and keep a copy of the certificate prepared as per standard format supplied by M.C.I.

4) Display of Degrees and registration numbers:
   Every physician shall display the registration number accorded to him by the State Medical Council / MCI in his clinic and in all his Prescriptions/Certificates/ Receipts given to his patients. Physicians shall display as suffix to their names only recognized medical degrees or such certificates / diplomas and memberships / honors which confer professional

5) Use of Generic names of drugs:
   Every physician should, as far as possible; prescribe drugs with generic names
6) **Highest Quality Assurance in patient care:**
Physician should aid in safeguarding the profession. Physician shall employ an attendant who is their registered or enlisted under the Medical Council in force and shall not permit such persons to attend, treat or perform operations.

7) **Exposure of Unethical Conduct:**
A physician should expose, without fear or favour, incompetent or corrupt, dishonest or unethical conduct on the part of members of the profession.

8) **Payment of Professional Services:**
The personal financial interests of a physician should not conflict with the medical interests. A physician should announce his fees before rendering service. It is unethical to enter into a contract of "no cure no payment".

9) **Evasion of Legal Restrictions:**
The Physician shall observe the laws of the country. He should be cooperative in observance and enforcement of sanitary laws and regulations in the interest of public

B. **DUTIES OF PHYSICIANS TO THEIR PATIENTS:**

1) **Obligations to the Sick:**
Though a physician is not bound to treat each and every person asking his services, he should not only be everready to respond to the sick and the injured, but should be mindful of the high character of his mission and the responsibility he discharges in the course of his professional duties. A physician should visit at the hour indicated to the patients. In case of emergency a physician must treat the patient and shall not refuse treatment to a patient. However for good reason he may refer the patient to another physician. Medical practitioner having any incapacity detrimental to the patient is not permitted to practice his profession.

2) **Patience, Delicacy and Secrecy:**
Patience and delicacy should characterize the physician. Confidences concerning individual or domestic life entrusted by patients to a physician and defects in the disposition or character of patients observed during medical attendance should never be revealed unless the laws of the State require their revelation

3) **Prognosis:**
The Physician should neither exaggerate nor minimize the gravity of a patient’s condition.

4) **The patient must not be neglected:**
A physician is free to choose whom he will serve. He should, however, respond to any request for his assistance in an emergency. Once having undertaken a case, the physician should not neglect the patient. Provisionally or fully registered medical practitioner shall not willfully commit an act of negligence.
5) **Engagement for an Obstetric Case:**
When a physician who has been engaged to attend an obstetric case is absent and another is sent for and delivery accomplished, the acting physician is entitled to his professional fees.

C. DUTIES OF PHYSICIAN IN CONSULTATION:

1) **Unnecessary consultations should be avoided:**
However in case of serious illness the physician should request consultation, such consultation should be justifiable and in the interest of the patient. Consulting pathologists / radiologists or asking for any other diagnostic Lab investigation should be done judiciously.

2) **Consultation for Patient's Benefit:**
In every consultation, the benefit to the patient is of foremost importance.

3) **Punctuality in Consultation:**
Utmost punctuality should be observed by a physician.

4) **Statement to patient after consultation:**
All statements to the patient or his representatives should take place in the presence of the consulting physicians. The disclosure of the opinion to the patient or his relatives or friends shall rest with the medical attendant. Differences of opinion should be frankly and impartially explained to the patient or his relatives or friends.

5) **Treatment after Consultation:**
No decision should restrain the attending physician from making such subsequent variations in the treatment, the reasons for the variations should be discussed / explained. The same privilege, with its obligations, belongs to the consultant when sent for in an emergency during the absence of attending physician. The attending physician may prescribe medicine, whereas the consultant may prescribe only in case of emergency.

6) **Patient Referred to Specialists:**
When a patient is referred to a specialist by the attending physician, a case summary of the patient should be given to the specialist.

7) **Fees and other charges:**
A physician shall clearly display his fees and other charges on the board of his chamber / hospital. Prescription should also make clear if the physician himself dispensed any medicine. A physician shall write his name and designation in full along with registration particulars in his prescription letter head. In Government hospital the name of the prescribing doctor can be written below signature.
D. RESPONSIBILITIES OF PHYSICIANS TO EACH OTHER:

1) **Dependence of Physicians on each other:**
   A physician should render gratuitous service to all physicians and their immediate family members.

2) **Conduct in Consultation:**
   No insincerity, rivalry or envy should be indulged in Consultation, respect should be observed towards the physician in-charge. & no discussion should be carried on in the presence of the patient.

3) **Consultant not to take charge of the case:**
   When a physician has been called for consultation, the Consultation should normally not take charge of the case, especially on the solicitation of the patient or friends. The consultant shall not criticize the referring physician. He / she shall discuss the diagnosis & treatment

   **Appointment of Substitute:**
   Whenever a physician requests another physician to attend his patients during his temporary absence from his practice, professional courtesy requires the acceptance of such appointment as additional responsibility & such patients should be restored to the care of the latter upon his return.

4) **Visiting another Physician’s Case:**
   When it becomes the duty of a physician occupying an official position to see and report upon an illness or injury, the physician should communicate to the physician in attendance so as to give him an option of being present & should avoid remarks upon the diagnosis or the treatment that has been adopted.

E. DUTIES OF PHYSICIAN TO THE PUBLIC AND TO THE PARAMEDICAL PROFESSION:

1) **Physicians as Citizens:**
   Physicians, as good citizens, possessed of special training should disseminate advice on public health issues. They should play their part in enforcing the laws of the community and in sustaining the institutions that advance the interests of humanity.

2) **Public and Community Health:**
   Physicians, especially those engaged in public health work, should enlighten the public concerning quarantine regulations and measures for the prevention of epidemic and communicable diseases. When an epidemic occurs a physician should not abandon his duty for fear of contracting the disease himself.
3) **Pharmacists / Nurses:**
Physicians should recognize and promote the practice of different paramedical services such as, pharmacy and nursing as professions and should seek their cooperation wherever required.

**F. UNETHICAL ACTS:**

A physician shall not aid or abet or commit any of the following acts which shall be construed as unethical

1) **Advertising:**
Soliciting of patients directly or indirectly, by a physician, by a group of physicians or by institutions or organizations is unethical. Advertising or publicity through any mode to invite attention to him or to his professional position, skill, qualification, achievements, associations, affiliations or honors would ordinarily result in his self aggrandizement. A Medical practitioner is however permitted to make a formal announcement in press regarding the following:


   Printing of self-photograph, in the letter head or on sign board of the consulting room shall be regarded as acts of, self advertisement and unethical However, Printing of sketches, diagrams, picture of human system shall not be treated as unethical.

2) **Patent and copy rights:**
A physician may patent surgical instruments, appliances and medicine or copyright applications, methods and procedures. However, it shall be unethical if the benefits are not made available to institutions where the interest of large population is involved.

3) **Running an open shop (Dispensing of Drugs and Appliances by Physicians):**
A physician should not run an open shop for sale of medicine for dispensing prescription prescribed by doctors other than himself. It is not unethical for a physician to prescribe or supply drugs, remedies or appliances as long as there is no exploitation of the patient.

4) **Rebates and Commission:**
A physician shall not give, solicit, or receive nor shall he offer to give solicit or receive, any gift, gratuity, commission or bonus in consideration of or return for the referring, recommending or procuring of any patient for medical, surgical or other. Nothing, shall prohibit payment of salaries by a qualified physician to other duly qualified person rendering medical care
5) **Secret Remedies:**
The prescribing or dispensing by a physician of secret remedial agents of which he does not know the composition, or the manufacture or promotion of their use is unethical and as such prohibited.

6) **Human Rights:**
The physician shall not aid or abet torture nor shall he be a party to either infliction of mental or physical trauma or concealment of torture inflicted by some other person or agency in clear violation of human rights.

7) **Euthanasia:**
Practicing euthanasia shall constitute unethical conduct. However on specific occasion, the question of withdrawing supporting devices to sustain cardiopulmonary function even after brain death, shall be decided only by a team of doctors. A team of doctors shall declare withdrawal of support system. Such team shall consist of the doctor in charge of the patient, Medical Officer in charge of the hospital and a doctor nominated by the in-charge of the hospital from the hospital staff or in accordance with the provisions of the Transplantation of Human Organ Act, 1994.

**G. WHAT IS MISCONDUCT:**

The following acts of commission or omission on the part of a physician shall constitute professional misconduct rendering him / her liable for disciplinary action.

1) **Violation of the Regulations:**
If he / she commits any violation of these regulations.

2) If he / she does not maintain the medical records of his / her indoor patients for a period of three years as per regulation 1.3 and refuses to provide the same within 72 hours when the patient or his / her authorized representative makes a request for it as per the regulation 1.3.2. (CHAPTER-1)

3) If he / she does not display the registration number accorded to him/ her by the State Medical Council or the Medical Council of India in his clinic, prescriptions and certificates etc. issued by him or violates the provisions of regulation 1.4.2. (CHAPTER-1)

4) **Adultery or improper conduct:**
Abuse of professional position by committing adultery or improper conduct with a patient or by maintaining an improper association with a patient will render a physician liable for disciplinary action as provided under the Indian Medical Council Act, 1956 or the concerned State Medical Council Act.

5) **Conviction by Court of Law:**
Conviction by a court of law for offences involving moral turpitude / Criminal acts.
6) **Sex Determination Tests:**
On no account sex determination test shall be undertaken with the intent to terminate the life of a female foetus developing in her mother’s womb, unless there are other absolute indications for termination of pregnancy as specified in the Medical Termination of Pregnancy act, 1971.

7) **Signing Professional Certificates, Reports and Other Documents:**
Registered medical practitioners are in certain cases bound by law to give, or may from time to time be called upon or requested to give certificates, notification, reports and other documents of similar character signed by them in their professional capacity for subsequent use in the courts or for administrative purposes etc.

8) A registered medical practitioner shall not contravene the provisions of the Drugs and Cosmetics Act and regulations made there under.

9) Performing or enabling unqualified persons to perform an abortion or any illegal operation for which there is no medical, surgical or psychological indication.

10) A registered medical practitioner shall not issue certificates of efficiency in modern medicine to unqualified or non-medical person.

11) A physician should not contribute to the lay press articles and give interviews regarding diseases and treatments which may have the effect of advertising himself or soliciting practices; but is open to write to the lay press under his own name on matters of public health, hygienic living or to deliver public lectures, give talks on the radio / TV / Internet chat for the same purpose and send announcement of the same to lay press.

12) An institution run by a physician for a particular purpose such as a maternity home, nursing home, private hospital, rehabilitation center or any type of training institution etc. may be advertised in the lay press, but such advertisements should not contain anything more than the name of the institution, type of patients admitted, type of training and other facilities offered and the fees.

13) It is improper for a physician to use an unusually large sign board and write on it anything other than his name, qualifications obtained from a University or a statutory body, titles and name of his speciality, registration number including the name of the State Medical Council under which registered. The same should be the contents of his prescription papers. It is improper to affix a sign-board on a chemist’s shop or in places where he does not reside or work.

14) The registered medical practitioner shall not disclose the secrets of a patient that have been learnt in the exercise of his / her profession except-
   i) In a court of law under orders of the Presiding Judge; ii) In circumstances where there is a serious and identified risk to a specific person and / or community; and iii) Notifiable diseases.
   ii) In case of communicable diseases public health authorities should be informed immediately.
15) The registered Medical practitioner shall not refuse on religious grounds alone to give assistance in or conduct of sterility, birth control, circumcision and medical termination of pregnancy when there is medical indication, unless the medical practitioner feels himself / herself incompetent to do so.

16) Before performing an operation the physician should obtain in writing the consent from the husband or wife parent or guardian in the case of minor, or the patient himself as the case may be. In an operation which may result in sterility the consent of both husband and wise is needed.

17) A registered medical practitioner shall not public photographs or case reports of his / her patients without their permission, in any medical or other journal in a manner by which their identity could be made out. If the identity is not to be disclosed, the consent is not needed.

18) In the case of running of a nursing home by a physician and employing assistants to help him / her, the ultimate responsibility rests on the physician.

19) A physician shall not use touts or agents for procuring patients.

20) A Physician shall not claim to be specialist unless he has a special qualification in that branch.

21) No act of invitro fertilization or artificial insemination shall be undertaken without the informed consent of the female patient and her spouse as well as the donor, such consent shall be obtained in writing only after the patient is provided, at her own level of comprehension, with sufficient information about the purpose, methods, risks, inconveniences, disappointments of the procedure and possible risks and hazards.

22) Research:
Clinical drug trials or other research involving patients or volunteers as per the guidelines of ICMR can be undertaken, provided ethical consideration are borne in mind. Violation of existing MCMR guidelines in this regard shall constitute misconduct. Consent taken from the patient for trial of drug or therapy which is not as per the guidelines shall also be constructed as misconduct.

23) If a physician posted in rural area is found absent on more than two occasions during inspection by the Head of the District Health Authority or the Chairman, Zila Parishad, the same shall be constructed as a misconduct if it is recommended to the Medical Council of India / State Medical Council by the State Government for action under these Regulations.

24) If a physician posted in a medical college / institution both as teaching faculty or otherwise shall remain in hospital / college during the assigned duty hours. If they are found absent on more than two occasions during this period, the same shall be construed as a misconduct if it is certified by the Principal / Medical superintendent and forwarded through the State Government to Medical Council of India / State Medical Council for action under these Regulations.
H. PUNISHMENT AND DISCIPLINARY ACTION:

1) It must be clearly understood that the instances of offences and of Professional misconduct which are given above do not constitute and are not intended to constitute a complete list of the infamous acts which calls for disciplinary action, and that by issuing this notice the Medical Council of India and or State Medical Councils are in no way precluded from considering and dealing with any other form of professional misconduct on the part of a registered practitioner. Circumstances may and do arise from time to time in relation to which there may occur questions of professional misconduct which do not come within any of these categories. Every care should be taken that the code is not violated in letter or spirit. In such instances as in all others, the Medical Council of India and / or State Medical Councils have to consider and decide upon the facts brought before the Medical Council of India and / or State Medical Councils.

2) It is made clear that any complaint with regard to professional misconduct can be brought before the appropriate Medical Council for Disciplinary action. Upon receipt of any compliant of professional misconduct, the appropriate Medical Council would hold an enquiry and give opportunity to the registered medical practitioner to be heard in person or by pleader. If the medical practitioner is found to be guilty of committing professional misconduct, the appropriate Medical Council may award such punishment as deemed necessary or may direct the removal altogether or for a specified period, from the register of the name of the delinquent registered practitioner. Deletion from the Register shall be widely publicized in local press as well as in the publications of different Medical Associations / Societies / Bodies.

3) In case the punishment of removal from the register is for a limited period, the appropriate council may also direct that the name so removed shall be restored in the register after the expiry of the period for which the name was ordered to be removed.

4) Decision on complaint against delinquent physician shall be taken within a time limit of 6 months.

5) During the pendency of the complaint the appropriate Council may restrain the physician from performing the procedure or practice which is under scrutiny.

6) Professional incompetence shall be judged by peer group as per guidelines prescribed by Medical Council of India.

(This is a condensed form of Medical Ethics taken from “Professional conduct, Etiquette and Ethics” as published in, Regulations of Indian medical Council, 2002 for full details visit http://www.mciindia.org/know/rules/ethics.htm)
MEDICAL COUNCIL OF INDIA

No.MCI-34(1)/2009-Med./99639

Date: 21/02/2009

To,
1. The Deans / Principals of all the Medical Colleges/Institutions in India.
2. The Directorate of Medical Education of all the States in India.
3. The Health secretaries of all the States Government in India.
4. The Registrar of all the Universities and Deemed Universities in India.

Subject:- Implementation of the guidelines framed by the Medical Council of India to curb the menace of ragging in medical colleges.

Sir/Madam,
This is to inform you that as per the decision taken in the meeting of Dr. R.K. Raghvan Committee appointed by the Hon'ble Supreme Court to supervise the measures being implemented to prevent the ragging, the Medical Council of India has prepared the guidelines to curb the menace of ragging in medical colleges which has been approved by the members of Adhoc Committee appointed by the Hon'ble Supreme Court of India and of the Executive Committee of the Council at its meeting held on 30.12.2008.

The guidelines to curb the menace of ragging in medical colleges are as under:-
1) Every student for the purposes of his/her admission to Medical College shall furnish a Character Certificate from the institutions wherefrom he/she has passed his qualifying examination, which would mention the status of his/her behavioral pattern specially in terms as to whether he/she has displayed persistent violent or aggressive behavior or any desire to harm others.

2) The admitting medical institution shall keep intense watch upon students who has a negative entry in this regard.

3) An annual undertaking signed by each student, whether fresher or senior and his/her parent(s) jointly stating that each of them have read the relevant instructions/regulations against ragging, as well as punishments, and that if the ward has been found guilty he/she shall be proceeded against, shall be procured.

4) Such an undertaking shall be furnished in English as well as in vernacular (mother tongue of the parent) at the beginning of each academic year by every student.

5) An undertaking to the similar effect should be obtained every year from each student admitted to the hostel.
6) The undertaking should be appended to the brochure containing the guidelines and other relevant instructions in regard to ragging ad consequences of indulging in ragging.

7) The Compliance to the above effect shall be ensured by each of the affiliating university to which the concerned medical institution is affiliated and would be verified by the council annually.

8) In order to ensure the ‘ragging free environment’ in the campus, each institution shall compulsorily in the ‘prospectus’ and other admission related documents, shall depict the earlier directions of the Apex court and/or of the Central or State Governments as applicable, so that candidates and their parents are sensitized in respect of the prohibition and consequences of ragging.

9) Each institution should engage or seek the assistance of ‘professional counselor’ at the time of admissions to counsel ‘freshers’ in order to prepare them for the life ahead, specially for adjusting to the life in hostels.

10) It should be ensured that there would be a clear gap of one to two weeks between the date of joining of ‘freshers’ and the ‘seniors’, ensuring that classes for the seniors shall commence later, so as to enable the ‘freshers’ to familiarize themselves with the campus environment and adjust to the sudden changeover from schools to higher education.

11) It shall be mandatory for the institutions to inform the parents of senior students to send their wards only on the due date of commencement of the academic session and not earlier.

12) All the examining Universities with which the institutions are affiliated or the deemed to be Universities shall compulsorily amend their relevant ordinances or byelaws, as the case may be, to incorporate the schedule gap of one or two weeks between the date joining of ‘freshers’ and ‘seniors’.

13) Each institutions shall arrange a joint ‘sensitization’ programme and ‘counselling’ of both ‘freshers’ and ‘seniors’ to be addressed by the Principal/Head of the institution and the Convener of the Anti Ragging Committee. The inmates of the Hostel shall be addressed on this count by the Hostel Warden.

14) Each institution shall have an Anti-Ragging Committee and Anti Ragging Squad, which shall comprise of other than senior teachers of the institution, representatives of Civil & Police administration and local media.

15) Each institution shall constitute a ‘Mentoring Cell’ to oversee and involve senior students as ‘Mentors’ for the ‘freshers’.
16) Such a Mentoring Cell shall be constituted at the end of every academic year, where application shall be invited from the students to join the Mentoring Cell as Mentors for the succeeding academic year.

17) An anonymous random survey shall be conducted by each institution across the entire 1st year batch of students every fortnight during the first three months of the academic session in order to verify and cross-check whether the campus is genuinely ragging free or not.

18) The methodology of such survey may be designed by the institution appropriately. However, doing so it shall be ensured that the institution dose not compromise with the anonymity of the ‘whistle blowers’.

19) The institution shall ensure that private commercially managed lodges or hostels outside campuses, must be registered with the local Police Authorities and permission to start such hostel or their registration must necessarily be recommended by the Heads of the Medical Institutions.

20) In case the victim of ragging his/her parent/guardian is not satisfied with the action taken by the Head of the Institution or by other institutional authorities, or where Head of the institution is of the opinion that the incident ought to be so reported, it shall be mandatory for the intuition to file a First Information Report with the local police authorities.

21) It must be ensured by each of the institution that the Complaints or information in regard to ragging could be oral or written and even from third parties and the confidentiality their of must be protected at all costs.

22) Each institution shall ensure that remedial action is initiated and completed within a week of the incident itself, so that complaints do not linger ad allow either interest in pursuing the matter to vane or enable the culprits to tamper evidence or influence witnesses.

In view of above, you are requested to implement the above guidelines and take immediate action in the matter, accordingly.

The status report on the compliance may be sent within four (4) weeks positively.

Yours faithfully,
(Lt. Col.(Retd) Dr. A.R.N. Setalvad)
Secretary
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MESSAGE FOR THE FRESH BATCH STUDENTS

On behalf of the University, it gives me immense pleasure in welcoming the fresh batch of students joined in the Professional courses. They deserve congratulations for having succeeded in getting admission to professional courses of this university. This is a very crucial period for all the students because they are entering the portals of the higher education straightway from the school environment. The professional courses like Medical, Dentistry, Physiotherapy, Nursing etc., consists of very difficult subjects, the syllabi are very heavy and the duration of the courses are lengthy. Therefore, the students should learn and adopt to the new methods of teaching and training in professional colleges.

I recommend the students that they should consult library and museums at regular intervals. They should also adopt self-learning techniques. There are number of books available in the market on the subjects like Communication Skills, How to read better? etc. Every medical student must acquire enough knowledge and skills to operate computer programmes.

The students should behave in a dignified manner both inside and outside the college premises because they have entered in to a noble profession and doctors always enjoy higher position in the society.

Regular reading habits, sincere and honest effort for learning will help the students to achieve their objective of becoming a good doctor.

I wish all the best and very bright future to all the students.

Sd/-
(Dr. I.V Rao M.D.)
VICE-CHANCELLOR,
Dr. N.T.R. University of Health Sciences, A.P.
VIJAYAWADA.