MAHATMA GANDHI UNIVERSITY
of
MEDICAL SCIENCES & TECHNOLOGY
JAIPUR

Syllabus

MD – PAEDIATRICS

(3 Years Post Graduate Degree Course)

Notice

1. Amendment made by the Medical Council of India in Rules/Regulations of Post Graduate Medical Courses shall automatically apply to the Rules/Regulations of the Mahatma Gandhi University of Medical Sciences & Technology (MGUMST), Jaipur.

2. The University reserves the right to make changes in the syllabus/books/guidelines, fees-structure or any other information at any time without prior notice. The decision of the University shall be binding on all.

3. The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

RULES & REGULATIONS

MD PAEDIATRICS (9010)
(3 Years Post Graduate degree course)

TITLE OF THE COURSE:
It shall be called Doctor of Medicine.

ELIGIBILITY FOR ADMISSION:
No candidate of any category (including NRI quota) shall be eligible for admission to MD/MS courses, if he or she has not qualified NEET PG (MD/MS) conducted by National Board of Examinations or any other Authority appointed by the Government of India for the purpose.

(1) General Seats

(a) Every student, selected for admission to postgraduate medical course shall possess recognized MBBS degree or equivalent qualification and should have obtained permanent Registration with the Medical Council of India, or any of the State Medical Councils or should obtain the same within one month from the date of his/her admission, failing which the admission of the candidate shall be cancelled;

(b) Completed satisfactorily one year's rotatory internship or would be completing the same before the date announced by the University for that specific year as per MCI rules after passing 3rd professional MBBS Part II Examination satisfactorily.

(c) In the case of a foreign national, the Medical Council of India may, on payment of the prescribed fee for registration, grant temporary registration for the duration of the postgraduate training restricted to the medical college/institution to which he/she is admitted for the time being exclusively for postgraduate studies; however temporary registration to such foreign national shall be subject to the condition that such person is duly registered as medical practitioner in his/her own country from which he has obtained his basic medical qualification and that his degree is recognized by the corresponding Medical Council or concerned authority.

(2) NRI Seats

(a) Students from other countries should possess passport, visa and exchange permits valid for the period of their course of study in this Institution and should also observe the regulations of both central and state governments regarding residential permits and obtain no-objection certificate from the same.

(b) The candidate should have a provisional "Student Visa". If he comes on any other visa and is selected for admission, he will have to first obtain a student visa from his country and then only he will be allowed to join the course. Therefore it is imperative to obtain provisional student visa before coming for Counseling.

(c) This clause is applicable to NRI/Foreign Students only.

CRITERIA FOR SELECTION FOR ADMISSION:

(1) NRI Quota

15% of the total seats are earmarked for Foreign National / PIO / OCI/ NRI / Ward of NRI/NRI sponsored candidates who would be admitted on the basis of merit obtained in NEET PG or any other criteria laid down by Central Government/MCI.

(2) Remaining Seats (Other than NRI Quota Seats)

(a) Admissions to the remaining 85% of the seats shall be made on the basis of the merit obtained at the NEET conducted by the National Board of Examinations or any other Authority appointed by the Government of India for the purpose.
(b) The admission policy may be changed according to the law prevailing at the time of admission.

COUNSELING/INTERVIEW:
(1) Candidates in order of merit will be called for Counseling/Interview and for verification of original documents and identity by personal appearance.
(2) Counseling will be performed and the placement will be done on merit-cum-choice basis by the Admission Board appointed by the Government of Rajasthan.

RESERVATION:
Reservation shall be applicable as per policy of the State Government in terms of scheduled caste, scheduled tribe, back ward class, special back ward class, women and handicapped persons.

ELIGIBILITY AND ENROLMENT:
Every candidate who is admitted to MD/MS course in Mahatma Gandhi Medical College & Hospital shall be required to get himself/herself enrolled and registered with the Mahatma Gandhi University of Medical Sciences & Technology after paying the prescribed eligibility and enrolment fees.

The candidate shall have to submit an application to the MGUMST for the enrolment/eligibility along with the following original documents with the prescribed fees (upto November 30 of the year of admission without late fees and upto December 31 of the year of admission with late fees) –
(a) MBBS pass Marks sheet/Degree certificate issued by the University (Ist MBBS to Final MBBS)
(b) Certificate regarding the recognition of medical college by the Medical Council of India.
(c) Completion of the Rotatory Internship certificate from a recognized college.
(d) Migration certificate issued by the concerned University.
(e) Date of Birth Certificate
(f) Certificate regarding registration with Rajasthan Medical Council / Medical Council of India / Other State Medical Council.

REGISTRATION
Every candidate who is admitted to MD/MS course in Mahatma Gandhi Medical College & Hospital shall be required to get himself/herself registered with the Mahatma Gandhi University of Medical Sciences & Technology after paying the prescribed registration fees.

The candidate shall have to submit an application to the MGUMST for registration with the prescribed fees (upto November 30 of the year of admission without late fees upto December 31 of the year of admission with late fees).

DURATION OF COURSE:
The course shall be of 3 years duration from the date of commencement of academic session.

PERIOD OF TRAINING:
(1) The period of training for obtaining Post graduate degrees (MD/MS) shall be three completed years including the period of examination.

(2) It shall however be two years for candidates who have obtained the recognised PG Diploma in the subject.

MIGRATION:

No application for migration to other Medical Colleges will be entertained from the students already admitted to the MD/MS course at this Institute.

METHODS OF TRAINING FOR MD/MS:

Method of training for MD/MS courses shall be as laid down by the Medical Council of India.

ONLINE COURSE IN RESEARCH METHODS

i. All postgraduate students shall complete an online course in Research Methods to be conducted by an Institute(s) that may be designated by the Medical Council of India by way of public notice, including on its website and by Circular to all Medical Colleges. The students shall have to register on the portal of the designated institution or any other institute as indicated in the public notice.
ii. The students have to complete the course by the end of their 2nd semester.
iii. The online certificate generated on successful completion of the course and examination thereafter, will be taken as proof of completion of this course
iv. The successful completion of the online research methods course with proof of its completion shall be essential before the candidate is allowed to appear for the final examination of the respective postgraduate course.
v. This requirement will be applicable for all postgraduate students admitted from the academic year 2019-20 onwards

ATTENDANCE, PROGRESS AND CONDUCT:

(1) Attendance:

(a) 80% attendance in each course is compulsory. Any one failing to achieve this, shall not be allowed to appear in the University examination.
(b) A candidate pursuing MD/MS course shall reside in the campus and work in the respective department of the institution for the full period as a full time student. No candidate is permitted to run a clinic/work in clinic/laboratory/ nursing home while studying postgraduate course. No candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration. Each year shall be taken as a unit for the purpose of calculating attendance.
(c) Every candidate shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, CCR, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons. Candidates should not be absent continuously as the course is a full time one.

(2) Monitoring Progress of Studies- Work diary/Log Book:

(a) Every candidate shall maintain a work diary in which his/her participation in the entire training program conducted by the department such as reviews, seminars, etc. has to be chronologically entered.
(b) The work scrutinized and certified by the Head of the Department and Head of the Institution is to be presented in the University practical/clinical examination.

(3) Periodic tests:

There shall be periodic tests as prescribed by the Medical Council of India and/ or the Board of Management of the University, tests shall include written papers, practical/clinical and viva voce.

(4) Records:
Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University when called for.

THESIS:

(1) Every candidate pursuing MD/MS degree course is required to carry out work on research project under the guidance of a recognized post graduate teacher. Then such a work shall be submitted in the form of a Thesis.
(2) The Thesis is aimed to train a postgraduate student in research methods & techniques.
(3) It includes identification of a problem, formulation of a hypothesis, designing of a study, getting acquainted with recent advances, review of literature, collection of data, critical analysis, comparison of results and drawing conclusions.
(4) Every candidate shall submit to the Registrar of the University in the prescribed format a Plan of Thesis containing particulars of proposed Thesis work within six months of the date of commencement of the course on or before the dates notified by the University.
(5) The Plan of Thesis shall be sent through proper channel.
(6) Thesis topic and plan shall be approved by the Institutional Ethics Committee before sending the same to the University for registration.
(7) Synopsis will be reviewed and the Thesis topic will be registered by the University.
(8) No change in the thesis topic or guide shall be made without prior notice and permission from the University.
(9) The Guide, Head of the Department and head of the institution shall certify the thesis. Three printed copies and one soft copy of the thesis thus prepared shall be submitted by the candidate to the Principal. While retaining the soft copy in his office, the Principal shall send the three printed copies of the thesis to the Registrar six months before MD/MS University Examinations. Examiners appointed by the University shall evaluate the thesis. Approval of Thesis at least by two examiners is an essential pre-condition for a candidate to appear in the University Examination.
(10) Guide: The academic qualification and teaching experience required for recognition by this University as a guide for thesis work is as laid down by Medical Council of India/Mahatma Gandhi University of Medical Sciences & Technology, Jaipur.
(11) Co-guide: A co-guide may be included provided the work requires substantial contribution from a sister department or from another institution recognized for teaching/training by Mahatma Gandhi University of Medical Sciences & Technology, Jaipur/Medical Council of India. The co-guide shall be a recognized postgraduate teacher.
(12) Change of guide: In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the University.

ELIGIBILITY TO APPEAR FOR UNIVERSITY EXAMINATION:

The following requirements shall be fulfilled by every candidate to become eligible to appear for the final examination:

(1) Attendance: Every candidate shall have fulfilled the requirement of 80% attendance prescribed by the University during each academic year of the postgraduate course. (as per MCI rules)

(2) Progress and Conduct: Every candidate shall have participated in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year as designed by the department.
(3) Work diary and Logbook: Every candidate shall maintain a work diary for recording his/her participation in the training program conducted in the department. The work diary and logbook shall be verified and certified by the Department Head and Head of the Institution.
(4) Every student would be required to present one poster presentation, to read one paper at a National/State Conference and to have one research paper which should be published/accepted for publication/ sent for publication to an indexed journal during the period of his/her post graduate studies so as to make him/her eligible to appear at the Post Graduate Degree Examination.
(5) Every student would be required to appear in and qualify the Pre-University Post graduate degree Mock examination. Post graduate students who fail to appear in or do not qualify the Pre-University Post graduate degree Mock examination shall not be permitted to appear in the final examination of the University.

The certification of satisfactory progress by the Head of the Department/ Institution shall be based on (1), (2), (3), (4) and (5) criteria mentioned above.

ASSESSMENT:

(1) The progress of work of the candidates shall be assessed periodically by the respective guides and report submitted to the Head of the Institution through the Head of the Department at the end of every six months. The assessment report may also be conveyed in writing to the candidate who may also be advised of his/her shortcomings, if any.
(2) In case the report indicate that a candidate is incapable of continuing to do the work of the desired standard and complete it within the prescribed period, the Head of the Institution may recommend cancellation of his/her registration at any time to the University.
(3) Formative Assessment:
    (a) General Principles
        i. The assessment is valid, objective, constructive and reliable.
        ii. It covers cognitive, psychomotor and affective domains.
        iii. Formative, continuing and summative (final) assessment is also conducted.
        iv. Thesis is also assessed separately.
    (b) Internal Assessment
        i. The internal assessment is continuous as well as periodical. The former is based on the feedback from the senior residents and the consultants concerned. Assessment is held periodically.
        ii. Internal assessment will not count towards pass/fail at the end of the program, but will provide feedback to the candidate.
        iii. The performance of the Postgraduate student during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student.
        iv. Marks should be allotted out of 100 as under
            1) Personal Attributes - 20 marks
                a. Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.
                b. Motivation and Initiative: Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.

c. Honesty and Integrity: Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.

2) Clinical Work - 20 marks
   a Availability: Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
   b Diligence: Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
   c Academic Ability: Intelligent, shows sound knowledge and skills, participates adequately in academic activities and performs well in oral presentation and departmental tests.
   d Clinical Performance: Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.
3) Academic Activities - 20 marks
   a. Performance during presentation at Journal club/ Seminar/Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.
4) End of term theory examination - 20 marks
   a. End of term theory examination conducted at end of 1st, 2nd year and after 2 years 9 months.
5) End of term practical examination - 20 marks
   a. End of term practical/oral examinations after 2 years 9 months.
   b. Marks for personal attributes and clinical work should be given annually by all the consultants under whom the resident was posted during the year. Average of the three years should be put as the final marks out of 20.
   c. Marks for academic activity should be given by the all consultants who have attended the session presented by the resident.
   d. The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations.
   e. Yearly (end of 1st, 2nd & 3rd year) theory and practical examination will be conducted by internal examiners and each candidate will enter details of theory paper, cases allotted (2 long & 2 short) and viva.
   f. Log book to be brought at the time of final practical examination.

APPOINTMENT OF EXAMINERS:

Appointment of paper setters, thesis evaluators, answer books evaluators and practical & viva voce examiners shall be made as per regulations of the Medical Council of India.

SCHEME OF EXAMINATION:

Scheme of examination in respect of all the subjects of MD/MS shall be as under :

(1) The examination for MD/MS shall be held at the end of three Academic Years.
(2) Examinations shall be organized on the basis of marking system.
(3) The period of training for obtaining MD/MS degrees shall be three completed years including the period of examination.

(4) The University shall conduct not more than two examinations in a year for any subject with an interval of not less than 4 months and not more than 6 months between the two examinations.

(5) The examinations shall consist of:

(a) Thesis :

i. Thesis shall be submitted at least six months before the main Theory examinations.

ii. The thesis shall be examined by a minimum of three examiners – one Internal and two External examiners who shall not be the examiners for Theory and Clinical/Practical.

iii. In departments where besides the two earmarked practical/clinical examiners no one else is a qualified P.G. teacher, in that case the Thesis shall be sent to the third external examiner who shall actually be in place of the internal examiner.

iv. Only on the acceptance of the thesis by any two examiners, the candidate shall be eligible to appear for the final examination.

v. A candidate whose thesis has been once approved by the examiners will not be required to submit the Thesis afresh, even if he/she fails in theory and/or practical of the examination of the same branch.

vi. In case the Thesis submitted by a candidate is rejected, he/she should be required to submit a fresh Thesis.

(b) Theory papers:

i. There shall be four theory papers, as below:

Paper I: Basic sciences as applied to Paediatrics

Paper II: Neonatology and community Paediatrics

Paper III: General Paediatrics including advances in Paediatrics relating to Cluster I specialties.
(**Cluster I** - Nutrition, Growth and Development, Immunization, Infectious disease, Genetics, Immunology, Rheumatology, Psychiatry and Behavioural Sciences, Skin, Eye, ENT, Adolescent Health, Critical Care, Accidents and Poisoning)

Paper IV: Paediatric Medicine including advances in Paediatrics relating to Cluster II specialties.
(Cluster II - Neurology and Disabilities, Nephrology, Hematology and Oncology, Endocrinology, Gastroenterology and Hematology, Respiratory and Cardiovascular disorders)

ii. Each theory paper examination shall be of three hours duration.

iii. Each theory paper shall carry maximum 100 marks.

iv. The question papers shall be set by the External Examiners.

v. There will be a set pattern of question papers.
Each question paper shall contain ten short essay questions (SEQ). All questions shall be compulsory, having no choice.

vi. The answer books of theory paper examination shall be evaluated by two External and two internal examiners. Out of the four paper setters, the two paper setters will be given answer books pertaining to their papers and the answer books of the remaining two papers will be evaluated by two Internal Examiners. It will be decided by the President as to which paper is to be assigned to which Internal Examiner for evaluation.

vii. A candidate will be required to pass theory and practical examinations separately in terms of the governing provisions pertaining to the scheme of examination in the post graduate regulations. The examinee should obtain minimum 40% marks

in each theory paper and not less than 50% marks cumulatively in all the four papers for degree examination to be cleared as "passed" at the said Degree examination.

(c) Clinical/ Practical & Oral examinations:

i. Clinical/Practical and Oral Examination of 400 marks will be conducted by at least four examiners, out of which two (50%) shall be External Examiners.

ii. A candidate will be required to secure at least 50% (viz. 200/400) marks in the Practical including clinical and viva voce examinations.

(6) If a candidate fails in one or more theory paper(s) or practical, he/she shall have to reappear in the whole examination i.e. in all theory papers as well as practical.

GRACE MARKS

No grace marks will be provided in MD/MS examinations.

REVALUATION / SCRUTINY:

No Revaluation shall be permitted in the MD/MS examinations. However, the student can apply for scrutiny of the answer books as per University Rules.

GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR MD IN PAEDIATRICS (9010)

Preamble

The purpose of PG education is to create specialists who would provide high quality health care and advance the cause of science through research & training.

A post graduate student after undergoing the required training should be able to deal effectively with the needs of the community and should be competent to handle the problems related to his specialty including recent advances. S/He should also acquire skills in teaching of medical/para-medical students.

The purpose of this document is to provide teachers and learners illustrative guidelines to achieve defined outcomes through learning and assessment. This document was prepared by various subject-content specialists. The Reconciliation Board of the Academic Committee has attempted to render uniformity without compromise to purpose and content of the document. Compromise in purity of syntax has been made in order to preserve the purpose and content. This has necessitated retention of "domains of learning" under the heading "competencies".

SUBJECT SPECIFIC OBJECTIVES

The objectives of MD Course in Paediatrics are to produce a competent pediatrician who:

- Recognizes the health needs of infants, children and adolescents and carries out professional obligations in keeping with principles of the National Health Policy and professional ethics
- Has acquired the competencies pertaining to Paediatrics that are required to be practiced in the community and at all levels of health system
- Has acquired skills in effectively communicating with the child, family and the community
- Is aware of contemporary advances and developments in medical sciences as related to child health
- Is oriented to principles of research methodology
- Has acquired skills in educating medical and paramedical professionals
- Is able to recognize mental conditions and collaborate with Psychiatrists/Child Psychologists for the treatment of such patients

SUBJECT SPECIFIC COMPETENCIES

A. Cognitive domain

At the end of the MD course in Paediatrics, the students should be able to:

1. Recognize the key importance of child health in the context of the health priority of country
2. Practice the specialty of Paediatrics in keeping with the principles of professional ethics
3. Identify social, economic, environmental, biological and emotional determinants of child and adolescent health, and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to children
4. Recognize the importance of growth and development as the foundation of Paediatrics and help each child realize her/his optimal potential in this regard

5. Take detailed history; perform full physical examination including neuro-development and behavioral assessment and anthropometric measurements in the child and make clinical diagnosis
6. Perform relevant investigative and therapeutic procedures for the paediatric patient
7. Interpret important imaging and laboratory results
8. Diagnose illness based on the analysis of history, physical examination and investigations
9. Plan and deliver comprehensive treatment for illness using principles of rational drug therapy
10. Plan and advice measures for the prevention of childhood disease and disability
11. Plan rehabilitation of children with chronic illness and handicap and those with special needs
12. Manage childhood emergencies efficiently
13. Provide comprehensive care to normal, 'at risk' and sick neonates
14. Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation
15. Recognize the emotional and behavioral characteristics of children, and keep these fundamental attributes in focus while dealing with them
16. Demonstrate empathy and humane approach towards patients and their families and keep their sensibilities in high esteem
17. Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities
18. Develop skills as a self-directed learner. Recognize continuing educational needs; use appropriate learning resources and critically analyze published literature in order to practice evidence-based Paediatrics
19. Demonstrate competence in basic concepts of research methodology and epidemiology
20. Facilitate learning of medical/nursing students, practicing physicians, paramedical health workers and other providers as a teacher-trainer
21. Implement National Health Programs, effectively and responsibly
22. Organize and supervise the desired managerial and leadership skills
23. Function as a productive member of a team engaged in health car, research and education.
24. Recognize mental conditions, characterized by self absorption, reduced ability to respond, abnormal functioning in social interaction with or without repetitive behavior, poor communication (autism) and collaborate with Psychiatrists/Child Psychologists for the treatment of such patients.

All PG students joining the course should have an orientation session to acquaint them with the requirements and other details. A plan for orientation session has been given at Annexure-1

B. Affective Domain:

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching

C. Psychomotor domain

At the end of the course, the student should have acquired following skills:

I. History and Examination

The student must gain proficiency in eliciting, processing and systemically presenting Paediatrics history and examination with due emphasis of the important and minimization of less important facts. The following skills must be achieved:

i) Recognition and demonstration of physical findings
ii) Recording of height, weight, head circumference and mid arm circumference and interpretation of these parameters using growth reference standard assessment of nutritional status and growth
iii) Assessment of pubertal growth
iv) Complete development assessment by history and physical examination, and recognizing developmental disabilities, including autism
v) Systematic examination
vi) Neonatal examination including gestation assessment by physical neurological criteria
vii) Examination of the fundus and the ear-drum
viii) Skills related to IMNCI and IYCF

II. Monitoring Skills

Non-invasive monitoring of blood pressure, pulse and respiratory rates, saturation; ECG

III. Investigative Procedures

i) Venous, capillary and arterial blood sampling using appropriate precautions
ii) Pleural, peritoneal, pericardial aspiration; subdural, ventricular and lumbar puncture
iii) Tuberculin test
iv) Biopsy of liver and kidney
v) Urethral catheterization and suprapubic tap
vi) Gastric content aspiration

IV. Therapeutic Skills

i) Breast feeding assessment and counseling; management of common problems
ii) Establishment of central and peripheral vascular access; CVP monitoring
iii) Administration of injections using safe injection practices
iv) Determination of volume and composition of intravenous fluids and heir administration
v) Neonatal and Pediatric basic and advanced life support
vi) Oxygen administration, CPAP and nebulization therapy
vii) Blood and blood component therapy
viii) Intraosseous fluid administration
ix) Phototherapy, umbilical artery and venous catheterization and exchange transfusion
x) Nasogastric feeding
xi) Common dressings and abscess drainage; intercostal tube insertion
xii) Basic principles of rehabilitation
xiii) Peritoneal dialysis
xiv) Mechanical ventilation

V. Bed side investigations, including

i) Complete blood counts, micro ESR, peripheral smear
ii) Urinalysis
iii) Stool microscopy and hanging drop
iv) Examination of CSF and other body fluids
v) Blood sugar
vi) Shake test on gastric aspirate

vii) Gram stain, ZN stain

VI. Patient Management Skills

i) Proficiency in management of pediatric emergencies, including emergency triaging
ii) Drawing and executing patient management plan and long term care
iii) Documenting patient records on day to day basis and problem oriented medical record
iv) Care of a normal and sick newborn, management of neonatal disorders hypothermia, sepsis, convulsions, jaundice, metabolic problems
v) Identifying need for timely referral to appropriate departments/health facility and pre-transport stabilization of the sick child

VII. Communication Skills; Attitudes; Professionalism

i) Communicating with parents/child about nature of illness and management plan prognostication, breaking bad news
ii) Counseling parents on breast feeding, nutrition, immunization, disease prevention, promoting healthy life style
iii) Genetic counseling
iv) Communication and relationship with colleagues, nurses and paramedical workers
v) Appropriate relation with pharmaceutical industry
vi) Health economics
vii) Professional and research ethics

VIII. Interpretation of Investigations

i) Plan x-ray chest, abdomen, skeletal system
ii) Contrast radiological studies: Barium swallow, barium meal, barium enema, MCU
iii) Ultrasound skull and abdomen
iv) Histopathological, biochemical and microbiological investigations
v) CT Scan and MRI (skull, abdomen, chest)
vi) Electrocardiogram, electroencephalogram
vii) Arterial and venous blood gases
viii **Desirable:** Interpretation of radio-isotope studies, audiogram, neurophysiological studies, (BERA, VER, Electromyography [EMG], Nerve Conduction Velocity [NCV]), lung function tests

IX. Academic Skills

i) Familiarity with basic research methodology, basic IT skills. Planning the protocol of the thesis, its execution and final report
ii) Review of literature
iii) Conducing clinical sessions for undergraduates medical students
iv) Desirable: writing and presenting a paper. Teaching sessions for nurses and medical workers

Syllabus

Course contents:

Guidelines

During the training period, effort must be made that adequate time is spent in discussing child health problems of public health importance in the country or particular region.

Basic Sciences

- Principles of inheritance, chromosomal disorders, single gene disorders, multifactorial / polygenic disorders, genetic diagnosis and prenatal diagnosis, pedigree drawing.

- Embryogenesis of different organ systems especially heart, genitourinary system, gastro-intestinal tract. Applied anatomy and functions of different organ systems.
- Physiology of micturition and defecation; placental physiology; fetal and neonatal circulation; regulation of temperature, blood pressure, acid base balance, fluid electrolyte balance and calcium metabolism.
- Vitamins and their functions.
- Hematopoiesis, hemostasis, bilirubin metabolism.
- Growth and development at different ages, growth charts; puberty and its regulation.
- Nutrition: requirements and sources of various nutrients.
- Pharmacokinetics of common drugs, microbial agents and their epidemiology.
- Basic immunology, biostatistics, clinical epidemiology, ethical and medico-legal issues.
- Teaching methodology and managerial skills.

Understanding the definition, epidemiology, aetiopathogenesis, presentation, complications, differential diagnosis and treatment of the following, but not limited to:

Growth and development

• Principles of growth and development	• Normal growth and development,
• Normal growth and development	• Sexual maturation and its disturbances
• Failure to thrive and short stature	• Autism (as mentioned in objective 24)

Neonatology

• Perinatal care	• Low birth weight
• Care in the labor room and resuscitation	• Newborn feeding
• Prematurity	• Respiratory distress
• Common transient phenomena	• Apnea
• Infections	• Anemia and bleeding disorders
• Jaundice	• Gastrointestinal disorders
• Neurologic disorders	• Malformations
• Renal disorders	• Understanding of perinatal medicine
• Thermoregulation and its disorders	

Nutrition

• Maternal nutritional disorders; Impact on fetal outcome	• Nutrition for the low birth weight
	• Breast feeding
• Infant feeding including complementary feeding	• Vitamin and mineral deficiencies
• Protein energy malnutrition	• Obesity
• Adolescent nutrition	• Parenteral and enteral nutrition
• Nutritional management of systemic illness (GI, hepatic, renal illness)	

Cardiovascular

• Congenital heart diseases (cyanotic and acyanotic)	• Rheumatic fever and rheumatic heart disease
• Infective endocarditis	• Arrhythmia
• Disease of myocardium (cardiomyopathy, myocarditis)	• Diseases of pericardium
• Hyperlipidemia in children	• Systemic hypertension

Respiratory

• Congenital and acquired disorders of nose tonsils and adenoids	• Infections of upper respiratory tract
• Congenital anomalies of lower respiratory tract	• Obstructive sleep apnea
• Foreign body in larynx trachea and bronchus	• Acute upper airway obstruction
• Subglottic stenosis (acute, chronic)	• Trauma to larynx
• Bronchial asthma	• Neoplasm of larynx and trachea
• Acute pneumonia, bronchiolitis	• Bronchiolitis
• Recurrent, interstitial pneumonia	• Aspiration pneumonia, GER
• Atelectasis	• Suppurative lung disease
• Pleural effusion	• Lung cysts, mediastinal mass

Gastrointestinal and liver disease

• Disease of oral cavity	• Disorders of deglutition and esophagus
• Peptic ulcer disease	• Congenital pyloric stenosis
• Intestinal obstruction	• Acute and chronic pancreatic disorders
• Malabsorption syndrome	• Acute and chronic diarrhea
• Irritable bowel syndrome	• Inflammatory bowel disease
• Hirschsprung disease	• Anorectal malformations
• Hepatitis	• Hepatic failure
• Chronic liver disease	• Budd-chiari syndrome
• Metabolic diseases of liver	• Cirrhosis and portal hypertension

Nephrologic and Urologic disorders

• Acute and chronic glomerulonephritis	• Xanthema syndrome
• Hemolytic uremic syndrome	• Urinary tract infection
• VUR and renal scarring	• Involvement in systemic diseases
• Renal tubular disorders	• Neurogenic bladder, voiding dysfunction
• Congenital and hereditary renal disorders	• Renal and bladder stones
• Posterior urethral valves	• Hydronephrosis
• Undescended testis, hernia, hydrocoele	• Wi`lms tumor

Neurologic disorders

• Seizure and non-seizure paroxysmal events	• Epilepsy, epileptic syndromes
• Meningitis, encephalitis	• Brain abscess
• Febrile encephalopathies	• Guillain-Barre syndrome
• Neurocysticercosis and other neuroinfestations	• HIV encephalopathy
• SSPE	• Cerebral palsy
• Neurometabolic disorders	• Neurodegenerative disorders
• Neuromuscular disorders	• Mental retardation
• Learning disabilities	• Muscular dystrophies
• Acute flaccid paralysis and AFP surveillance	• Malformations
• Movement disorders	• Tumors

Hematology and Oncology

• Deficiency anemias	• Hemolytic anemias

• Aplastic anemia	• Pancytopenia
• Thrombocytopenia	• Disorders of hemostasis
• Blood component therapy	• Transfusion related infections
• Bone marrow transplant/stem cell transplant	• Acute and chronic leukemia
• Myelodysplastic syndrome	• Lymphoma
• Neuroblastoma	• Hypercoagulable states

Endocrinology

• Hypopituitarism/hyperpituitarism	• Diabetes insipidus
• Pubertal disorders	• Hypo – and hyper-thyroidism
• Adrenal insufficiency	• Cushing's syndrome
• Adrenogenital syndromes	• Diabetes mellitus
• Hypoglycemia	• Short stature
• Gonadal dysfunction and intersexuality	• Obesity

Infections

• Bacterial (including tuberculosis)	• Viral (including HIV)
• Fungal	• Parasitic
• Rickettssial	• Mycoplasma
• Protozoal and parasitic	• Nosocomial infections
• Control of epidemics and infection prevention	• Safe disposal of infective material

Emergency and Critical Care

• Emergency care of shock	• Cardio-respiratory arrest
• Respiratory failure	• Acute renal failure
• Status epilepticus	• Acute severe asthma
• Fluid and electrolyte disturbances	• Acid-base disturbances
• Poisoning	• Accidents
• Scorpion and snake bites	

Immunology and Rheumatology

• Arthritis (acute and chronic)	• Vasculitides
• Immunodeficiency syndromes	• Systemic lupus erythematosus

ENT

• Acute and chronic otitis media	• Hearing loss
• Post-diphtheritic palatal palsy	• Acute/chronic tonsillitis/adenoids
• Allergic rhinitis/sinusitis	• Foreign body

Skin Diseases

• Exanthematous illnesses	• Vascular lesions
• Pigment disorders	• Vesicobullous disorders
• Infections	• Steven-johnson syndrome
• Atopic, seborrheic dermatitis	• Drug rash
• Alopecia	• Icthyosis

Eye problems

• Refraction and accommodation	• Partial/total loss of vision
• Cataract	• Night blindness
• Strabismus	• Conjunctival and corneal disorders
• Disorders of retina, including tumors	

Behavioral and Developmental disorders

• Rumination, pica	• Enuresis, encopresis
• Sleep disorders	• Habit disorders
• Breath holding spells	• Anxiety disorders
• Mood disorders	• Temper tantrums
• Attention deficit hyperactivity disorders	• Autism (as mentioned in objective 24)

Social/Community Paediatrics

• National health programs related to child health	• IMNCI
• Vaccines: constituents, efficacy, storage, contraindications and adverse reactions	
• Rationale and methodology of pulse polio immunization	
• Child labor, abuse, neglect	• Adoption
• Disability and rehabilitation	• Rights of the child
• National policy of child health and population	• Juvenile delinquency
• Principles of prevention, control of infections (food, water, soil, vector borne)	• Investigation of an epidemic

Orthopaedics

• Major congenital orthopedic deformities	• Bone and joint infections
• Common bone tumors	

Approach to clinical problems

Growth and development

• Precocious and delayed puberty	• Developmental delay
• Impaired learning	•

Neonatology

• Low birth weight newborn	• Sick newborn

Nutrition

• Lactation management and complementary feeding	• Protein energy malnutrition (underweight, wasting, stunting) and micronutrient deficiencies
• Failure to thrive	

Cardiovascular

• Murmur	• Cyanosis
• Congestive heart failure	• Systemic hypertension
• Arrhythmia	• Shock

GIT and Liver

• Acute diarrhea	• Persistent and chronic diarrhea
• Abdominal pain and distension	• Ascites
• Vomiting	• Constipation
• Gastrointestinal bleeding	• Jaundice
• Hepatosplenomegaly	• Hepatic failure and encephalopathy

Respiratory

• Cough/chronic cough	• Hemoptysis
• Wheezy child	• Respiratory distress

Infections

• Acute onset pyrexia	• Prolonged pyrexia with and without localizing signs
• Recurrent infections	• Fever with xanthema
• Nosocomial infections	

Renal

• Hematuria/dysuria	• bladder/bowel incontinence
• Voiding dysfunctions	• renal failure (acute and chronic)
• Hypertension	

Hematology and Oncology

• Anemia	• Bleeding

Neurology

• Limping child	• Convulsions
• Paraplegia, quadriplegia	• Cerebral palsy
• Macrocephaly and microcephaly	• Floppy infant
• Acute flaccid paralysis	• Headache

Endocrine

• Thyroid swelling	• Ambiguous genitalia
• Obesity	• Short stature

Miscellaneous

• Skin rash	• Lymphadenopathy
• Epistaxis	• Proptosis
• Arthralgia, arthritis	•

TEACHING AND LEARNING METHODS

Postgraduate teaching programme

General principles

Acquisition of practical competencies being the keystone of PG medical education, PG training should be skills oriented. Learning in PG program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

Teaching methodology

This should include regular bedside case presentations and demonstrations, didactic lectures, seminars, journal clubs, clinical meetings, and combined conferences with allied departments. The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision. Department should encourage e-learning activities.

Formal teaching sessions

In addition to bedside teaching rounds, at least 5-hr of formal teaching per week are necessary. The departments may select a mix of the following sessions:

- Journal club — Once a week
- Seminar — Once a fortnight
- Case discussions — Once a month
- Interdepartmental case or seminar [Cardiology, Pediatric Surgery] — Once a month
- Attend accredited scientific meetings (CME, symposia, and conferences).

- Additional sessions on resuscitation, basic sciences, biostatistics, research methodology, teaching methodology, hospital waste management, health economics, medical ethics and legal issues related to pediatric practice are suggested.
- There should be a training program on Research methodology for existing faculty to build capacity to guide research.
- The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- A postgraduate student of a postgraduate degree course in broad specialities/super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.
- **Log book**: During the training period, the post graduate student should maintain a Log Book indicating the duration of the postings/work done in Pediatric Wards, OPDs and Casualty. This should indicate the procedures assisted and performed, and the teaching sessions attended. The purpose of the Log Book is to:
  a) Help maintain a record of the work done during training,
  b) Enable Consultants to have direct information about the work; intervene if necessary,
  c) Use it to assess the experience gained periodically.

  The log book shall be used to aid the internal evaluation of the student. The Log books shall be checked and assessed periodically by the faculty members imparting the training.

Rotations
The postgraduate student should rotate through all the clinical units in the department. In addition, following special rotations should be undertaken:

Mandatory
Neonatology, perinatology
Intensive care, emergency

Desirable
Posting in Out Patient Services of the following specialties is recommended
- Skin
- Pediatric Surgery
- Physical Medicine and Rehabilitation
- Community

Note: Additionally, the PG students may be sent to allied specialties (Cardiology, Neurology, nephrology etc.) depending on facilities available. It should be ensured that the training conforms to the curriculum.

Thesis

Objectives
By carrying out a research project and presenting his work in the form of thesis, the student shall be able to:
- Identify a relevant research question
- Conduct a critical review of literature
- Formulate a hypothesis

- Determine the most suitable study design
- State the objectives of the study
- Prepare a study protocol
- Undertake a study according to the protocol
- Analyze and interpret research data, and draw conclusions
- Write a research paper

Guidelines
While selecting the topic, following should be kept in mind:
- The scope of study is limited to enable its conduct within the resources and time available
- The study must be ethically appropriate
- The emphasis should be on the process of research rather than the results
- The protocol, interim progress and final presentation is made formally to the department
- Only one student per teacher/thesis guide

There should be periodic department review of the thesis work, as per following schedule:

End of 6 months	Submission of protocol
During 2nd yr	Mid-term presentation
6 months prior to examination	Final presentation; submission

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

ASSESSMENT

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

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

Quarterly assessment during the MD training should be based on:
1. **Journal based / recent advances learning**
2. **Patient based /Laboratory or Skill based learning**
3. **Self directed learning and teaching**
4. **Departmental and interdepartmental learning activity**
5. **External and Outreach Activities / CMEs**

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

SUMMATIVE ASSESSMENT, i.e., assessment at the end of training
The summative examination would be carried out as per the Rules given in POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.
The postgraduate examination shall be in three parts:

1. **Thesis**

Every post graduate student shall carry out work on an assigned research project under the guidance of a recognised Post Graduate Teacher, the result of which shall be written up and submitted in the form of a Thesis. Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.

2. **Theory examination**

The examinations shall be organized on the basis of 'Grading'or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. The examination for M.D./ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period.

There shall be four theory papers. Each paper should have 10 short essay questions (SEQ)

Paper I: Basic sciences as applied to Paediatrics
Paper II: Neonatology and community Paediatrics
Paper III: General Paediatrics including advances in Paediatrics relating to Cluster I specialties
Paper IV: Paediatric Medicine including advances in Paediatrics relating to Cluster II specialties

Cluster I:	Nutrition, Growth and Development, Immunization, Infectious disease, Genetics, Immunology, Rheumatology, Psychiatry and Behavioral Sciences, Skin, Eye, ENT, Adolescent Health, Critical Care, Accidents and Poisoning
Cluster II:	Neurology and Disabilities, Nephrology, Hematology and Oncology, Endocrinology, Gastroenterology and Hematology, Respiratory and Cardiovascular disorders

3. Practical/clinical and Oral/viva voce examination

Practical examination

Case I
Case II (Newborn)
Case III
OSCE may be used.

Oral/Viva voce examination on defined areas by each examiner separately. Oral examination shall be comprehensive enough to test the post graduate student's overall knowledge of the subject.

Recommended Reading:

Books (latest edition)

- Nelson's Textbook of Pediatrics, Kliegman et al (Editors)
- Manual of Neonatal care, Cloherty
- Nada's Pediatric Cardiology, Kaene
- PG Textbook of Pediatrics, IAP P Gupta et al (Editors)
- Clinical Methods in Pediatrics, P Gupta
- Care of the newborn, Meharban Singh

Journals
03-05 international Journals and 02 national (all indexed) journals

Annexure I

Orientation sessions for PG students joining MD in Paediatrics

This could be spread over 4-5 sessions once or twice a week depending on departmental routine and feasibility.

For all PG students

Orientation to the Hospital: Various Departments and facilities available

- Communication skills: Patients and colleagues
- Literature search
- Basic research methodology
- Protocol writing and thesis

Pediatric PGs

Introduction to Residency in Paediatrics

- Universal precautions and appropriate disposal of hospital waste
- Management of shock
- Congestive cardiac failure
- Normal fluid and electrolyte requirement and their disorders
- Interpretation and management of disorders of acid-base balance
- Evaluation of a sick newborn
- Management of seizures, hypothermia and hypoglycemia in the newborn
- Management of seizures and status epilepticus
- Management of comatose patients
- Hospital management of severe PEM
- Acute kidney injury
- Fulminant hepatic failure
- Management of respiratory distress
- Management of acute diarrhea
- Approach to a bleeding child and its management
- Rational antibiotic therapy

Annexure - II

Postgraduate Students Appraisal Form

Pre / Para /Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training: FROM.....TO.....

Sr. No.	Particulars	Not satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1.	Journal based/recent advances learning				
2.	Patient based/Laboratory or Skill based learning				
3.	Self directed learning and teaching				
4.	Departmental and interdepartmental learning activity				
5.	External and Outreach Activities/CMEs				
6.	Thesis/Research work				
7.	Log Book Maintenance				

Publications Yes/ No

Remarks*_____
_____
_____

*REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE | SIGNATURE OF CONSULTANT | SIGNATURE OF HOD

MODEL PAPER

MD-9011 **Paed-I**

MD Examination Month, Year

PAEDIATRICS

Paper – I

Basic sciences as applied to Paediatrics

Time : Three Hours

Maximum Marks : 100

Attempt all questions

All questions carry equal marks. (**10 marks each**)

Draw diagrams wherever necessary

Q1. Discuss causes and management of hypernatremia in children.

Q2. How will you evaluate a child with suspected primary immune deficiency?

Q3. Discuss physiology of Renal tubules in pediatric age.

Q4. Discuss Prenatal diagnosis of Thalassemia.

Q5. How will you diagnose and manage a case of Brucellosis?

Q6. Discuss various RBC indices.

Q7. Embryonic development of heart and epidemiology of congenital heart disease.

Q8. Describe Liver function tests in Health and diseases.

Q9. Outline management of Dengue shock syndrome.

Q10. Discuss role of CBNAAT in pediatric patients.

MODEL PAPER

MD-9012 **Paed-II**

MD Examination Month, Year

PAEDIATRICS

Paper – II

Neonatology and Community Pediatrics

Time : Three Hours

Maximum Marks : 100

Attempt all questions

All questions carry equal marks. (**10 marks each**)

Draw diagrams wherever necessary

Q1. Describe the management of Neonatal shock.

Q2. Discuss the recent advances in sepsis markers in neonate.

Q3. Discuss the requirements of very low birth weight neonate.

Q4. Describe in detail complications and Management of enteric fever.

Q5. Discuss poor scholastic performance.

Q6. Describe non invasive ventilation in neonatal period.

Q7. Describe the management of perinatal varicella.

Q8. Discuss the recent guidelines for the management of Hepatitis B & Hepatitis C.

Q9. Discuss rapid diagnostic tests for childhood infections.

Q10. Describe fetal stem cell therapy.

MODEL PAPER

MD-9013 **Paed-III**

MD Examination Month, Year

PAEDIATRICS

Paper – III

General Paediatrics including advances in Paediatrics relating to Cluster I specialties

(**Cluster I** - Nutrition, Growth and Development, Immunization, Infectious disease, Genetics, Immunology, Rheumatology, Psychiatry and Behavioural Sciences, Skin, Eye, ENT, Adolescent Health, Critical Care, Accidents and Poisoning)

Time : Three Hours
Maximum Marks : 100

Attempt all questions
All questions carry equal marks. (**10 marks each**)
Draw diagrams wherever necessary

Q1. Describe complications of Idiopathic Rheumatoid arthritis.

Q2. Approach to suspected case of Inborn error of metabolism.

Q3. Describe in brief the management of Mental retardation.

Q4. Discuss the management of Autism Spectrum disorder.

Q5. Describe Fragile X syndrome

Q6. How will you approach a suspected case of Celphos poisoning in children?

Q7. How will you assess hearing in infants?

Q8. Discuss in brief Collodion baby.

Q9. Classify the sleep disorder and discuss restless leg syndrome

Q10. What are the complications of severe malaria?

MODEL PAPER

MD-9014 **Paed-IV**

MD Examination Month, Year

PAEDIATRICS

Paper – IV

Paediatric Medicine including advances in Paediatrics relating to Cluster II specialties

(**Cluster II** - Neurology and Disabilities, Nephrology, Hematology and Oncology, Endocrinology, Gastroenterology and Hematology, Respiratory and Cardiovascular disorders)

Time : Three Hours
Maximum Marks : 100

Attempt all questions
All questions carry equal marks. (**10 marks each**)
Draw diagrams wherever necessary

Q1. Discuss the differential diagnosis of child presenting in coma.

Q2. Write down GINA guidelines (2018) for management of childhood asthma

Q3. Discuss the recent advances in management of Steroid Resistant Nephrotic syndrome.

Q4. What are the new concepts in diagnosis and management of Aplastic Anaemia?

Q5. Discuss the Newer classification of childhood seizures.

Q6. Discuss reappraisal of methodology of diagnosis of heart failure.

Q7. Discuss the clinical features, diagnosis and management of scrub typhus.

Q8. Discuss the management of MDR and XDR Tuberculosis as per RNTCP guidelines.

Q9. Discuss the management of portal hypertension.

Q10. Describe the pneumococcal vaccine.