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 adolescene 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:

Semester	Time	Teaching Schedule
4th & 5th	* 08-09 AM * 09-12 AM	Lecturers (8) Clinical Posting (2 wks)
6th & 7th	* 08-09 AM * 09-12 AM	Lecturers (20) Clinical Posting (4 wks)
8th & 9th	* 08-09 AM * 09-12 AM * 12-01 PM * 02-04 PM	Lecturers (40) Clinical Posting (4 wks) Demonstrations / training tutorial Practical demonstration.

* 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

a) 6th / 7th Semester: New born: normal & abnormal and common childhood diseases.
b)8th / 9th Semester: Diseases in Childhood – diagnosis and management.

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

1. Birth Asphyxia.
2. Normal fluid and electrolyte balance in children.
3. Low birth weight babies.
4. Neonatal respiratory distress.
5. Jaundice in new born.
6. Neonatal infections.
7. Neonatal convulsions.
8. PEM and its management.
9. Vitamins deficiencies.
10. Nutritional anemia in infancy and childhood.
11. Acute diarrhea.
12. Hypothyroidism in children.
13. Congestive heart failure – diagnosis and management.
14. Congenital heart disease.
15. Rheumatic heart disease.
16. Hypertension in children, including hypertensive emergencies.
17. Acute respiratory infections.
18. Bronchial asthma including status asthmaticus.
19. Nephrotic syndrome.
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.
40. Common childhood poisonings.
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.
      b. Newborn – Nomenclature and assessment of gestational age.
      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 PEADIATRICS:

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.
- Anthropometery – 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.
- Breast feeding, Physiology of lactation, composition of breast milk, Colostrum, Initiation and technique of feeding. Exclusive breast feeding – Definition and benefits. Characteristic and advantages of breast milk. Hazards and demerits of prelacteal feed, top milk and bottle feeding. Feeding of LBW babies.
- 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.
- Vitamins – Recognition of vitamin deficiencies (A, D, K, C, B-Complex). Etiopathogenesis, clinical features, biochemical and radiological findings, differential diagnosis and management of nutritional rickets & scurvy. Hypervitaminosis A and D.

Desirable to know:

- Characteristics of transitional and mature milk (foremilk & hind milk). Prevention and management of lactational failure and feeding problems.
- 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 reerence 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.
- Pulmonary tuberculosis-tuberculous infection versus tuberculous disease, difference between primary and post-primary tuberculosis. Etiopathogenesis, diagnostic criteria in children versus adults. Diagnostic aids-technique and interpretation of mantoux test and BCG test. Radiological patterns, Chemoprophylaxis and treatment.
- 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.
- Acute diarrhoeal disease-Etiopathogenesis, clinical differentiation of watery and invasive diarrhoea, compliations of diarrheal illness. Assessment of dehydration, treatent at home and in hospital. Fluid and electrolyte management. Oral rehydration, composition of ORS.
- 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.

- Causes, diagnosis and management of cerebral palsy.
- Acute flaccid paralysis – Differentiation between Polio and Gullain-Barre syndrome.
- Microcephaly, Hydrocephalus, chorea.

Desirable to know

- Infantile tremor syndrome, infantile hemiplegia.

7) **ardiovascular 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.
- Hypertension in children –recognition and referral.

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.
- Low birth weight babies-causes of prematurity and small for date baby, clinical features and differentiation. Principles of feeding and temperature regulation. Problems of low birth weight babies.
- 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 inguinalhernia, 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
9. Hypertension.
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.
9. Generalised lymphadenopathy.
10. Congenital heart disease. (left to right shunt and right to left shunt).
11. Rheumatic Heart disease.
12. Nephrotic syndrome (generalized anasarca).
13. Acute glomerulonephritis.
14. Pleural effusion / consolidation.
15. Bronchial asthma (respiratory distress).
16. Upper respiratory infections.
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.
25. Normal newborn.
26. Low birth weight babies.
27. Preterm babies.
28. Neonatal jaundice.
29. Neonatal septicemia.
30. Newborn resuscitation.
31. Respiratory distress in new born.

List of usual Clinical Cases to be Covered

1. Normal New born
2. Normal development in a child.
3. Low birth weight babies
4. Temperature regulation in new born.
5. Neonatal Infections.
6. Neonatal Respiratory distress
7. Jaundice in New born.
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
19. Seizure disorders.
20. Acute flaccid paralysis
21. Cerebral palsy & mental retardation.
22. Leukemias
23. Hemolytic anemias & Thalassemia
24. Bleeding and coagulation disorders
25. Iron deficiency anemia.
26. Ac.Glomerulonephritis & Hematuria.
27. Nephrotic Syndrome.
28. Rheumatic fever and heart disease
29. Acute respiratory infections.
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:

Lumber puncture needle	Ambu bag and mask
Liver biopsy needle	Tongue depressor
Bone marrow aspiration	Tuberculin syringe
Intravenous Cannula	Endotracheal tube
Ryles tube	Laryngoscope
Emergency drugs	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.
4. Text Book of Pediatrics by Suraj Gupte.
5. Clinical methods in Pediatrics by Meharban Singh
6. Principles of Pediatrics, by Tirthankar Dutta.
7. Approach to Pediatric Problems by S.K.Mittal & Vijay Aggarwal.

Reference Books:

Text Book of Pediatrics by Nelson.