



NEONATOLOGY

**Residency Training Program
Leading to the degree of**

MD Neonatology (MD)

**SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY
ISLAMABAD**



CURRICULUM

MD Neonatology

CURRICULUM DEVELOPMENT COMMITTEE

Curriculum Development Committee

The Curriculum is developed by the following Committee:

- **Dr Syeda Shireen Gul**

Associate Professor
Department of Neonatology
Children Hospital, PIMS, SZABMU

- **Dr Sadia Riaz**

Associate Professor
Department of Neonatology
Children Hospital, PIMS, SZABMU

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Road Map of MD Neonatology –A Brief Summary

GENERAL INFORMATION AND PROGRAM GOALS

University offers a 6 years MD Program in the field of MD Neonatology. This program intends to attract candidates having an interest in the practice of neonatal medicine. The curriculum focuses on formal teaching and practical training in the said field.

This MD program aims to train and equip the postgraduate residents with the knowledge and skills essential lead in the field of Neonatology. The candidates, upon graduation, will be expected to demonstrate a high level of expertise in the field of neonatal medicine with specific focus on primary care and inpatient management of the sick newborns with special needs.

COURSE DESCRIPTION

A total of 192 credit hours of instruction and supervised activities are distributed over a six years academic period.

This comprises approximately 2592 contact hours of instruction and approximately 1008 scheduled hours including formal didactic, clinical and research experiences.

FIRST YEAR MD

ID	Title	Credit Hours
Neo-01	Normal Newborn Physiology and Principles of Care	4
Neo-02	Triage of the Sick Neonate	4
Neo-03	Extrauterine Maladaptation and Neonatal Resuscitation	3
Neo-04	Complications and Management of Prematurity/Low Birth Weight	4
Neo-05	Lung Mechanics in Diseased States and Ventilation Strategies	4
Neo-06	Introduction to Surfactant Therapy	3
Neo-07	Hemodynamic Assessment and Care of the Sick Neonate	4
Neo-08	Drug prescription and stewardship in the Neonatal ICU/Nursery	2
Neo-09	Introduction to Pediatrics and Continuum of Care/Pediatric Medicine Rotation	4
Total Credit Hours		32

SECOND YEAR MD

ID	Title	Credit
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		Hours
Neo-01	Delivery Room Care of Sick Newborns/Perinatology Rotation	4
Neo-02	Invasive versus Noninvasive Ventilation Strategies in the Neonate	4
Neo-03	Congenital Heart Disease and Clinical Implications	4
Neo-04	Neonatal Shock and Role of Inotropes	4
Neo-05	Diagnosis and Management of Neonatal Infections	4
Neo-06	Neonatal Jaundice: Diagnosis and Management	4
Neo-07	Pediatrics and Continuum of Clinical Care/Pediatric Medicine Rotation	4
Neo-08	Pre and Post-operative Care of the Neonate/Pediatric Surgery Rotation	4
	Total Credit Hours	32
	MTA Examination by the University	

THIRD YEAR MD

ID	Title	Credit Hours
Neo-01	Interpretation of Laboratory Data and Clinical Evidence	4
Neo-02	Bedside Neonatal Procedures: Indications and Methodology	4
Neo-03	Prematurity and Principles of Kangaroo Mother Care	2
Neo-04	Neonatal Encephalopathy and Role of Therapeutic Cooling	3
Neo-05	Ventilation and Integrated Care of the sick neonate	5
Neo-06	Management of Inborn Errors of Metabolism/Genetic Screening	2
Neo-07	Antenatal Consultation and Prenatal Diagnosis and Care	2
Neo-08	Pediatric Emergency Continuum of Care/ Pediatric Emergency and OPD Rotation	4
Neo-09	Community Pediatrics and Infectious Diseases/ Pediatric Isolation Ward Rotation	4
Neo-10	Research with emphasis on Evidence Based Medicine	2
	Total Credit Hours	32

FOURTH YEAR MD

ID	Title	Credit Hours
Neo-01	Triage of the Sick neonate and	3
Neo-02	Integration of Hierarchical Care of the Neonate	4
Neo-03	Neonatal Imaging and Diagnostic Implications/Pediatric Radiology Rotation	4
Neo-04	Bedside Neonatal Procedures and Point of Care Testing	4
Neo-05	Advanced Ventilation Strategies in the Sick Neonate	4
Neo-06	Pain Management in the Neonate	2
Neo-07	Clinical Audit and Quality Assurance in the NICU	2
Neo-08	Didactic teaching and Mentorship of Evidence Based Care	3
Neo-09	Antenatal Consultation and Prenatal Diagnosis and Care	3
Neo-10	Research with emphasis on Clinical Outcomes	3
	Total Credit Hours	32

FIFTH YEAR MD

ID	Title	Credit Hours
Neo-01	Clinical Supervision of Advanced Neonatal Care	5
Neo-02	Didactic Teaching and Mentorship of Evidence Based Neonatal Medicine	4
Neo-03	Advanced bedside procedures and Point of Care testing of the Sick Neonate	5
Neo-04	Clinical Audit and Quality Assurance in the NICU	4
Neo-05	Antenatal Consultation and Prenatal Diagnosis and Care	5
Neo-06	Ventilation and Integrated Care of the Sick Neonate	5
Neo-06	Fulfillment of Roles and Responsibilities assigned by the Faculty for the overall functioning of the Residency Program	4
	Total Credit Hours	32

Note: While the MD Neonatology Program previously comprised 5 years in which fifth year was the final year of the training, an additional year has now been included following which the Residency Program has now become 6 years in duration

Accordingly, Residents enrolled in the 6 years Residency program, shall have additional mandatory internal and/or external rotations in Pediatric Specialties in the Fifth and/or Sixth year of training, as determined by the Supervisor and/or Department Faculty.

They shall function in the capacity of Chief Residents and be responsible for supervision of advanced clinical care in the neonatal units.

They shall also fulfill tasks as assigned by the Supervisor and/or the Department Faculty for the overall functioning of the Residency Program and the Neonatal Units.

For Residents enrolled in the 5 years MD Neonatology Residency Program, the fifth year shall be considered the final year of training. These residents shall follow the scheme of learning as described earlier.

EXIT EXAM

At the end of the duration of the Residency Program, an exit exam shall be conducted, the style and form of which shall be determined by the University from time to time.

REQUIREMENTS OF MD DEGREE FOR GRADUATE STUDENTS ENROLLED IN THE PROGRAM

- Fulfillment of University requirements for postgraduate study
- Six years of consecutive full time advanced study and clinical training
- Complete and approved master's thesis based on original research during the course of study in an area related to specialty, suitable for publication in a reputable Neonatology/Pediatrics/ Scientific journal.
- Must complete all didactic and clinical work in the required curriculum and satisfactorily pass all the University requirements.
- A minimum of 60% marks must be earned in all work/ examinations attempted in the master's program. A grade below this will require re-examination.

A complete roadmap for MS/MD/MDS can be seen on the University website at www.szabmu.edu.pk.

INTRODUCTION

The Residency Program of MD Neonatology is six years in duration and covers all aspects of Neonatal Care leading to the degree of MD Neonatology.

This curriculum has been designed on the basis of SPICES model which is indicative of the competencies required at varying levels of training within the specialty together with the knowledge, skills and attitudes achieved by the trainees in acquiring those competencies. The training has been based on the current thinking and requirements for

- Greater protection of the public interest in providing clear information as to the level of training achieved.
- Improved access to specialty training than general practitioners.
- Greater flexibility of training through the availability of multiple instructors.
- Producing a competent workforce with the appropriate skills and knowledge necessary to meet the varying levels of treatment complexity , as well as considering the relative need and demand of potential patients.
- Acquire the experience to carry out research projects, critically evaluate scientific publications, and communicate clinical and research papers in journals and conferences.

RATIONALE

Need of the Program

The training program has been developed keeping in view the unmet need of the community. Following needs have been identified through formal and informal discussion with various stakeholders.

- Deficiency of quality health care providers to the public especially in remote areas in the field of Neonatology
- Dearth of competent faculty in the field of Neonatology.
- Deficiency of state of the art training sites in the field of Neonatology.

PURPOSE OF TRAINING

The purpose of the curriculum is to guide the training of an individual to the core level of competence required to become a specialist and consultant.

CONTEXT OF TRAINING

To provide an organized educational program with guidance and supervision, a structured training program will be followed so that each trainee is exposed to different aspects of the subject and acquired special knowledge and skills as expected in the program. The training will provide a basis for the candidate to develop into a lifelong learner who is capable of self-reflection and self-directed learning. It will provide a basis for further ongoing development in the field.

DURATION OF TRAINING

The program leading to MD in Neonatology will be of 6 years full time.

AIMS & OBJECTIVES

Aims of Training

The candidate should acquire and become proficient in the skills required for the practice of Neonatology with an emphasis on multidisciplinary treatment planning, disease prevention, diagnosis and provision of advanced treatment techniques for those clinical cases meriting specialist care.

The candidate should demonstrate attitudes necessary for the achievement of high standards of Neonatal practice both in relation to the needs of sick newborns and for his/her own personal development.

Learning Objectives

On completion of training, the trainee will be able to achieve following aptitudes.

Knowledge

- Demonstrate knowledge of clinical aspects of basic sciences as applied to Neonatal medicine. ^[L]_[SEP]
- Demonstrate knowledge of the etiology, pathophysiology and clinical presentations of neonatal diseases. ^[L]_[SEP]
- Demonstrate knowledge of the impact of systemic diseases on the health of neonates. ^[L]_[SEP]
- Acquire knowledge and comprehend the principles of theory and practice of all the domains of neonatal practice. ^[L]_[SEP]

Skills

- Take history and conduct clinical examination and investigations that allow collection of information needed to evaluate sick neonates. ^[L]_[SEP]
- Determine the differential, provisional and definitive diagnosis by interpreting and correlating findings from the history, clinical & radiographic examination together with other diagnostic tests. ^[L]_[SEP]
- Devise treatment plans specific to the needs of individual neonates. ^[L]_[SEP]
- Execute conventional and contemporary techniques of all the domains of Neonatal medicine. ^[L]_[SEP]
- Demonstrate competency in teaching methods, use of information technology, appraisal and assessment techniques and development of appropriate learning methods for lifelong learning. ^[L]_[SEP]
- Show evidence of ability to undertake research.

Attitudes ^[L]_[SEP]

- Demonstrate a professional and ethical approach to patient care. ^[L]_[SEP]

- Demonstrate a professional attitude to all the members of the team.
- Demonstrate full and clear understanding of equality and diversity legislation as it applies to the workplace and to professional practice.

ENTRY CRITERIA

Eligibility to apply for MD Neonatology

- Candidate must possess MBBS or equivalent degree and one year house job from PMC recognized Institution.
- Permanent valid registration with PM&DC.
- Declared successful in MD Part-I for University programs.
- In case of foreign candidate, a valid registration with Medical Council of the country of origin must be produced.
- Attested photo copies of the following documents must be attached with application form:
 - Computerized National Identity Card (CNIC)
 - Domicile certificate
 - Matric/O Level, FSc/A Level, Certificates or equivalent
 - MBBS degree with detailed marks certificates of all professional exams
 - MBBS Attempts certificates of all professional exams
 - NEB pass certificate (for foreign graduates)
 - House Job certificates
 - PMC valid permanent registration certificate
 - MD Part-I passing certificate
 - Experience Certificates (if any)
 - Migration Certificate (To be produced at the time of admission)
 - Admission Procedure

Details of admission procedure is available on university website at <http://www.szabmu.edu.pk/admission/postgraduate-admission>

CONTENT OF LEARNING:

The program outline addresses both the knowledge needed in MD Neonatology and allied medical specialties in its scope. A minimum of six years of formal training through a graded system of education as specified will equip the trainee with knowledge, skill and attitude at its completion to be able to practice advanced Neonatal care competently.

FIRST YEAR MD

ID	Title	Details of Titles
Neo-01	Normal Newborn Physiology and Principles of Care	Complete neonatal examination, principles of early essential newborn care and how these link to the physiology of the neonate
Neo-02	Triage of the Sick Neonate	Detailed history and clinical assessment of the neonate according to a biopsychosocial profile to filter out the sick neonate, and decide level of care accordingly
Neo-03	Extrauterine Maladaptation and Neonatal Resuscitation	Understanding the concept of extrauterine maladaptation in the pathophysiology of neonatal disease processes
Neo-04	Complications and Management of Prematurity/Low Birth Weight	Recognition of the various complications of prematurity like Low Birth Weight, Birth Asphyxia, RDS, PDA, ROP, IVH, NEC, Osteopenia of Prematurity, Apnea of Prematurity, Anemia of Prematurity, Neonatal Jaundice, and various Metabolic disorders, and subsequent management of these
Neo-05	Lung Mechanics in Diseased States and Ventilation Strategies	Normal physiology and altered dynamics in disease states like RDS, Pneumonia, Meconium Aspiration, Transient Tachypnea of Newborn, Bronchopulmonary Dysplasia, Chronic Lung Disease; and individualized ventilation strategies for each according to clinical and diagnostic evidence.
Neo-06	Introduction to Surfactant Therapy	Knowing the various types of surfactants, and indications, costs, dosing and methods of administration
Neo-07	Hemodynamic Assessment and Care of the Sick Neonate	Recognition of early and late signs of compensated and decompensated Shock of various types, and its management
Neo-08	Drug prescription and stewardship in the Neonatal ICU/Nursery	Principles of stewardship of antibiotic and/or frequently used drugs in the Neonatal unit
Neo-09	Introduction to Pediatrics and Continuum of Care/Pediatric Medicine Rotation	Recognition and in-patient management of diseases commonly manifesting in the Pediatric age group.

SECOND YEAR MD

ID	Title	Details of Titles
Neo-01	Delivery Room Care of Sick Newborns/Perinatology Rotation	Hands-on practice of the principles of early essential newborn care, and carrying out neonatal resuscitation of sick neonates successfully within the 'golden' minute
Neo-02	Invasive versus Noninvasive Ventilation Strategies in the Neonate	Compare and contrast invasive versus non-invasive modes of ventilations, and applying these to suitable candidates
Neo-03	Congenital Heart Disease and Clinical Implications	Reviewing the transition of fetal to neonatal circulation, screening for the presence of cyanotic versus acyanotic congenital heart disease on pulse oximetry and carefully performed neonatal examination, and managing these accordingly
Neo-04	Neonatal Shock and Role of Inotropes	Hemodynamic assessment and early recognition of signs of compensated and decompensated shock, carrying out an algorithmic approach for shock management using carefully selected inotropes, and employing bedside echocardiography as an effective tool for shock management.
Neo-05	Diagnosis and Management of Neonatal Infections	Recognizing early signs of neonatal sepsis, interpreting clinical and laboratory data for timely diagnosis, and effective management of neonatal sepsis using carefully selected antimicrobials. Here special emphasis should be laid upon the development of antimicrobial stewardship, giving sensitive antibiotics whenever sensitivity data is available, and when to discontinue antimicrobial use. Possibility of fungal sepsis in preterm neonates and immunocompromised or ventilated neonates must also be stressed upon.
Neo-06	Neonatal Jaundice: Diagnosis and Management	Determining the etiology, progression, and complications of neonatal jaundice, with emphasis on recognizing the signs of kernicterus, and timely interventions like exchange transfusion to avoid or reverse these complications. Developing the skill to perform a successful exchange transfusion should be emphasized upon,
Neo-07	Pediatrics and Continuum of Clinical Care/Pediatric Medicine Rotation	Recognition and in patient management of diseases commonly manifesting in the Pediatric age group
Neo-08	Pre and Post-operative Care of the Neonate/Pediatric Surgery Rotation	Recognizing the special needs of surgical neonates and learning the principles of care of these neonates.
	Total Credit Hours	32
	MTA Examination by the University	

THIRD YEAR MD

ID	Title	Details of Titles
Neo-01	Interpretation of Laboratory Data and Clinical Evidence	Correct correlation of laboratory investigations and clinical assessment for optimal neonatal care.
Neo-02	Bedside Neonatal Procedures: Indications and Methodology	Performing peripheral IV cannulation, peripheral arterial blood sampling, PICC line insertion, Umbilical catheterization, Lumbar Puncture, Ventricular Tap, Ascitic Tap, Suprapubic Aspiration, Abscess Incision and Drainage, Limb immobilization, Chest drain insertion, Needle Thoracostomy, NG and Foley's insertion.
Neo-03	Prematurity and Principles of Kangaroo Mother Care	Understanding and learning the principles of Kangaroo Mother Care (KMC), and how these apply to premature neonates. Here, weight assessment of babies on KMC must be performed daily and any stressors must be identified and removed.
Neo-04	Neonatal Encephalopathy and Role of Therapeutic Cooling	Categorize asphyxiated neonates according to Sarnat staging to predict prognosis and clinical outcome. Recognize subtle seizures, investigate cause and institute appropriate management.
Neo-05	Ventilation and Integrated Care of the sick neonate	Compare and contrast invasive versus non-invasive modes of ventilations, and applying these to suitable candidates. Integrate clinical findings and laboratory evidence to formulate suitable differential diagnosis.
Neo-06	Management of Inborn Errors of Metabolism/Genetic Screening	Recognizing the signs or possibility of inborn errors of metabolism in the sick neonate, and advise suitable workup to delineate etiology. Involve attendants and family of the neonate in genetic counseling and screening where appropriate.
Neo-07	Antenatal Consultation and Prenatal Diagnosis and Care	Reviewing antenatal charts and abnormal scan findings to accurately predict prognosis and advise workup or level of care required in the postnatal period.
Neo-08	Pediatric Emergency Continuum of Care/ Pediatric Emergency and OPD Rotation	Recognition of common pediatric ailments presenting to the outpatient clinics and pediatric emergency unit, and managing these effectively, and responsibly.
Neo-09	Community Pediatrics and Infectious Diseases/ Pediatric Isolation Ward Rotation	Introduction to principles of care of pediatric infectious diseases and management of these.
Neo-10	Research with emphasis on Evidence Based Medicine	Generating clinical evidence through indigenous research to help improve neonatal care.
	Total Credit Hours	32

FOURTH YEAR MD

ID	Title	Details of Titles
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Neo-01	Triage of the Sick neonate	Detailed history and clinical assessment of the neonate according to a biopsychosocial profile to filter out the sick neonate, and decide level of care accordingly
Neo-02	Integration of Hierarchical Care of the Neonate	Recognizing the importance of multidisciplinary team in the care of a sick neonate, and the perpetual need to 'step-up' or 'step down' clinical care of neonates. Here special emphasis must be laid upon shortest appropriate duration of stay in the NICU and criteria for discharge.
Neo-03	Neonatal Imaging and Diagnostic Implications/Pediatric Radiology Rotation	Performing focused ultrasound of the neonatal brain and recognizing common pathologies like intraventricular /parenchymal hemorrhage, hydrocephalus, infectious etiology, brain malformation. Also learning to recognize other common radiological diagnoses afflicting the neonate.
Neo-04	Bedside Neonatal Procedures and Point of Care Testing	Performing peripheral IV cannulation, peripheral arterial blood sampling, PICC line insertion, Umbilical catheterization, Lumbar Puncture, Ventricular Tap, Ascitic Tap, Suprapubic Aspiration, Abscess Incision and Drainage, Limb immobilization, Chest drain insertion, Needle Thoracostomy, NG and Foley's insertion.
Neo-05	Advanced Ventilation Strategies and Integrated Clinical Care in the Sick Neonate	Compare and contrast invasive versus non-invasive modes of ventilations, and applying these to suitable candidates. Integrate clinical findings and laboratory evidence to formulate suitable differential diagnosis.
Neo-06	Pain Management in the Neonate	Applying pharmacological and non-pharmacological interventions for pain relief in neonates.
Neo-07	Clinical Audit and Quality Assurance in the NICU	Participating as an effective member of a clinical audit team in neonatal units, and carrying out regular audits, and removing anomalies of care in a timely fashion
Neo-08	Didactic teaching and Mentorship of Evidence Based Care	Teaching of students, junior residents and nurses according to a structured curriculum, with emphasis on neonates currently admitted to neonatal units.
Neo-09	Antenatal Consultation and Prenatal Diagnosis and Care	Reviewing antenatal charts and abnormal scan findings to accurately predict prognosis and advise workup or level of care required in the postnatal period.
Neo-10	Research with emphasis on Clinical Outcomes	Enrollment in research of choice and developing skills to critically appraise literature for translation of evidence to neonatal practice.
	Total Credit Hours	32

FIFTH YEAR MD

ID	Title	Details of Titles
Neo-01	Clinical Supervision of Advanced Neonatal Care	
Neo-	Didactic Teaching and	Teaching of students, junior residents and nurses

02	Mentorship of Evidence Based Neonatal Medicine	according to a structured curriculum, with emphasis on neonates currently admitted to neonatal units.
Neo-03	Advanced bedside procedures and Point of Care testing of the Sick Neonate	Performing peripheral IV cannulation, peripheral arterial blood sampling, PICC line insertion, Umbilical catheterization, Lumbar Puncture, Ventricular Tap, Ascitic Tap, Suprapubic Aspiration, Abscess Incision and Drainage, Limb immobilization, Chest drain insertion, Needle Thoracostomy, NG and Foley's insertion.
Neo-04	Clinical Audit and Quality Assurance in the NICU	Participating as an effective member of a clinical audit team in neonatal units, and carrying out regular audits, and removing anomalies of care in a timely fashion
Neo-05	Antenatal Consultation and Prenatal Diagnosis and Care	Reviewing antenatal charts and abnormal scan findings to accurately predict prognosis and advise workup or level of care required in the postnatal period.
Neo-06	Ventilation and Integrated Care of the Sick Neonate	Compare and contrast invasive versus non-invasive modes of ventilations, and applying these to suitable candidates. Integrate clinical findings and laboratory evidence to formulate suitable differential diagnosis.
Neo-06	Fulfillment of Roles and Responsibilities assigned by the Faculty for the overall functioning of the Residency Program	Be a dynamic team member and fully participate in the running of the Neoanatology Department.
	Total Credit Hours	32

ALLIED SPECIALTIES

Trainee will be rotating in the following department for the clear understanding of the basic concepts. Mandatory rotations for MD Neonatology will be as follows:

- Department of Pediatric Medicine: 6 months
- Outpatient Department and Pediatric ER: 3 months
- Department of Pediatric Infectious Diseases: 3 months
- Department of Pediatric Surgery: 3 months
- Department of Perinatology: 3 months
- Department of Pediatric Radiology: 2 months
- Department of Pediatric Cardiology: 2 months

RESEARCH

The resident would be required to undertake a research project and to present the result for examination in the form of a thesis.

The resident would be encouraged to present and publish the result of the project in referred journals

The guideline for synopsis and thesis writing is available on the university website at www.szabmu.edu.pk

ASSESSMENT

Assessment of trainees will cover the cognitive, psychomotor and affective domains. It will take two forms :

- Formative Assessment [SEP]
- Summative Assessment [SEP]

Formative Assessment [SEP]

- It is the continuous assessment of progress and competence.
- It will be conducted through workplace based assessment throughout the training
- Assessment will be undertaken by a range of assessors who will be assessing for a range of procedures appropriate to the stage of training.

Formative assessment will include [SEP]

- Directly observed practical skills (DOPS) [SEP]
- Case based discussion (CbD) [SEP]
- Mini clinical examination exercises (Mini-CEX) [SEP]
- Multiple source feedback (MSF) [SEP]

Summative Assessment

Summative assessment will be held twice

- Mid Term Assessment (MTA) Examination [SEP]

- Final/Exit Examination ^[11]_{SEP}

The level of performance required for passing the exam will depend on the knowledge and skills necessary for acceptable performance and will not be adjusted to regulate the number or proportion of persons passing the examination. The pass point will be determined by careful analysis and judgment of acceptable performance.

Record of Clinical Cases

The trainees will be required to keep a record of the allocated clinical work in a log book. It will be the responsibility of trainee to keep the log book up to date with the signature of the faculty certifying the work.

TABLE OF SPECIFICATION

Table of Specification for Mid Term Assessment (MTA) and Final (Exit) examination is here as under:

FOR MTA: Paper A: Pediatric Medicine , MCQ's only, 50 marks

Paper B: Neonatology, MCQ's only, 50 marks

For FINAL (Exit) Exam

Theory Paper: Neonatology, MCQ's only, 100 marks

Long cases: 30 marks

Short cases : 40 marks

Viva Voce: 30 marks

TOS FOR MTA EXAM

First Year MD

ID	Title	Knowledge	Skill	Attitude	%	MCQ's
Neo-01	Normal Newborn Physiology and Principles of Care	2	1	1	4	4
Neo-02	Triage of the Sick Neonate	2	2	0	4	4
Neo-03	Extrauterine Maladaptation and Neonatal Resuscitation	2	1	1	4	4
Neo-04	Complications and Management of Prematurity/Low Birth Weight	6	2	2	10	10
Neo-05	Lung Mechanics in Diseased States and Ventilation Strategies	3	1	1	5	5
Neo-06	Introduction to Surfactant Therapy	2	2	1	5	5
Neo-07	Hemodynamic Assessment and Care of the Sick Neonate	5	3	2	10	10
Neo-08	Drug prescription and stewardship in the Neonatal ICU/Nursery	2	1	2	5	5
Neo-09	Introduction to Pediatrics and Continuum of Care/Pediatric Medicine Rotation	8	4	3	15	15

Second Year MD

ID	Title	Knowledge	Skill	Attitude	%	MCQ;s
Neo-01	Delivery Room Care of Sick Newborns/Perinatology Rotation	1	2	0	3	3
Neo-02	Invasive versus Noninvasive Ventilation Strategies in the Neonate	3	1	1	5	5
Neo-03	Congenital Heart Disease and Clinical Implications	3	1	1	5	5
Neo-04	Neonatal Shock and Role of Inotropes	3	1	0	4	4
Neo-05	Diagnosis and Management of Neonatal Infections	3	1	1	5	5
Neo-06	Neonatal Jaundice: Diagnosis and Management	2	1	0	3	3
Neo-07	Pediatrics and Continuum of Clinical Care/Pediatric Medicine Rotation	5	3	2	10	10
Neo-08	Pre and Post-operative Care of the Neonate/Pediatric Surgery Rotation	1	1	1	3	3

TOS for Final (Exit) EXAM

Final Examination (After completion of 6 years)

The student shall submit :

- Completion of Training Certificate
- Log Book
- Mandatory Workshop attendance
- Thesis on research topic approved by supervisor

through the Dean to the Controller of Examination.

If the thesis is not approved by the supervisor, application for extension may be recommended by supervisor through Registrar to the AS&RB. The final examination of major subject, thesis evaluation and viva voce examination will be conducted by board of Six (06) examiners in major subjects. The candidate will be examined in major subject and thesis as under: supervisor will not be paper setter /Examiner of his/her candidate as per PMDC regulation 2001.

FINAL (EXIT) EXAM

Theory Paper	100 MARKS
Viva Voce/Practical	100 MARKS
A) LONG CASE (ONE)	30 MARKS
B) SHORT CASE (FOUR)	40 MARKS
C) VIVA VOCE	30 MARKS

TOS FOR THEORY PAPER 1 AND 2 FINAL (EXIT) EXAM

THIRD YEAR MD

ID	Title	Knowledge	Skill	Attitude	%	MCQ's
Neo-01	Interpretation of Laboratory Data and Clinical Evidence	3	2	0	5	5
Neo-02	Bedside Neonatal Procedures: Indications and Methodology	2	2	0	4	4
Neo-03	Prematurity and Principles of Kangaroo Mother Care	1	1	0	2	2
Neo-04	Neonatal Encephalopathy and Role of Therapeutic Cooling	2	1	1	4	4
Neo-05	Ventilation and Integrated Care of the sick neonate	4	1	0	5	5
Neo-06	Management of Inborn Errors of Metabolism/Genetic Screening	3	0	0	3	3
Neo-07	Antenatal Consultation and Prenatal Diagnosis and Care	1	1	1	3	3
Neo-08	Pediatric Emergency Continuum of Care/ Pediatric Emergency and OPD Rotation	1	1	1	3	3
Neo-09	Community Pediatrics and Infectious Diseases/ Pediatric Isolation Ward Rotation	3	2	0	5	5
Neo-10	Research with emphasis on Evidence Based Medicine	1	0	1		2
	Total					36

FOURTH YEAR MD

ID	Title	Knowledge	Skill	Attitude	%	MCQ's
Neo-01	Triage of the Sick neonate and	2	2	1	5	5
Neo-02	Integration of Hierarchical Care of the Neonate	2	1	0	2	3
Neo-03	Neonatal Imaging and Diagnostic Implications/Pediatric Radiology Rotation	2	2	0	2	4
Neo-04	Bedside Neonatal Procedures and Point of Care Testing	2	1	1	4	4
Neo-05	Advanced Ventilation Strategies in the Sick Neonate	3	1	0	4	4
Neo-06	Pain Management in the Neonate	2	0	1	3	3
Neo-07	Clinical Audit and Quality Assurance in the NICU	2	1	1	4	4
Neo-08	Didactic teaching and Mentorship of Evidence Based Care	2	1	1	4	4

Neo-09	Antenatal Consultation and Prenatal Diagnosis and Care	1	1	1	3	3
Neo-10	Research with emphasis on Clinical Outcomes	1	1	0	2	2
	Total					36

FIFTH YEAR MD

ID	Title	Knowledge	Skill	Attitude	%	MCQ's
Neo-01	Clinical Supervision and Advanced Neonatal Care	5	1	1	7	7
Neo-02	Didactic Teaching and Mentorship of Evidence Based Neonatal Medicine	2	1	1	4	4
Neo-03	Advanced bedside procedures and Point of Care testing of the Sick Neonate	2	2	1	5	5
Neo-04	Clinical Audit and Quality Assurance in the NICU	1	1	1	3	3
Neo-05	Antenatal Consultation and Prenatal Diagnosis and Care	1	1	0	2	2
Neo-06	Ventilation and Integrated Care of the Sick Neonate	4	2	1	7	7
Neo-06	Fulfillment of Roles and Responsibilities assigned by the Faculty for the overall functioning of the Residency Program	0	0	0	0	0
	Total					28

LEARNING RESOURCES

List of Essential Readings :

Latest edition of the all of the following books are recommended:

- 1) Neonatology by Tricia Lacy Gomella
- 2) Essential of Neonatal Medicine by Khalid N Haque/Talal Waqar
- 3) Protocols of Neonatology by Khawaja Ahmed Irfan WAheed