The following Pediatric Learning Solutions courses align to focus areas of the Neonatal CCRN® Exam Content Outline. These courses equip candidates with the foundational knowledge necessary to approach the Neonatal CCRN® exam with confidence. Go to the Association of Critical-Care Nurses site for more information on the CCRN Exam.

Pediatric Learning Solutions’ course alignment with Neonatal CCRN® Exam Content Outline. (Note: PLS Courses are in italics under topic area)

I. **Clinical Judgment**

A. **Cardiovascular**

1. Acute Pulmonary Edema
   - Acquired Heart Disease
   - Acute Respiratory Distress Syndrome
   - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
   - Introduction to Arterial Blood Interpretation
   - Understanding Abnormal Blood Gases
   - Advanced Concepts in Respiratory Physiology
   - Mechanical Ventilation: Introduction to Pediatric Practices
   - High-Frequency Ventilation
   - Congestive Heart Failure
   - Lower Airway Disease
   - Pediatric Drowning

2. Cardiac Surgery
   - Congenital Heart Disease: Overview
   - Congenital Heart Disease: Acyanotic Defects
   - Congenital Heart Disease: Cyanotic Defects
   - Introduction to Hemodynamic Monitoring
   - Vasoactive Medications
   - Introduction to ECMO
   - Nursing Management of Chest Tubes
   - Cardiovascular Laboratory Procedures: Diagnostic and Interventional
   - Preventing Surgical Site Infections
   - General Post-Op Care of the Transplant Patient

3. Dysrhythmias
   - Structure and Function of the Heart
   - Electrophysiology
   - The Cardiac Monitor
   - Lines, Waves and Segments
   - Analyzing the ECG Rhythm Strip
   - Sinus Rhythms
   - Atrial Arrhythmias
   - Junctional Arrhythmias
   - Ventricular Arrhythmias
   - Atrioventricular Arrhythmias
   - Channelopathies
   - Temporary Pacemakers
   - Permanent Pacemakers and ICDs
4. Heart Failure
   Congestive Heart Failure
   Introduction to Hemodynamic Monitoring
   Vasoactive Medications
   Introduction to ECMO

5. Hypovolemic Shock
   Care of the Pediatric Patient in Shock

6. Structural Heart Defects
   Congenital Heart Disease: Overview
   Congenital Heart Disease: Acyanotic Defects
   Congenital Heart Disease: Cyanotic Defects
   Extravuterine Life: Assessment of the Neonate’s Transition
   Extravuterine Life: Fetal to Neonatal Circulation
   Maternal Factors Affecting the Newborn
   Congestive Heart Failure
   Introduction to Hemodynamic Monitoring
   Vasoactive Medications
   Introduction to ECMO
   Cardiovascular Laboratory Procedures: Diagnostic and Interventional
   Persistent Pulmonary Hypertension of the Newborn (PPHN)

B. Respiratory
1. Acute Respiratory Distress Syndrome
   Introduction to Arterial Blood Gas Interpretation
   Understanding Abnormal Blood Gases
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
   Management of the Difficult Airway
   Advanced Concepts in Respiratory Physiology
   Mechanical Ventilation: Introduction to Pediatric Practices
   High-Frequency Ventilation
   Preventing Ventilator-Associated Pneumonia
   Caring for a Child with a Tracheostomy
   Neonatal Respiratory Distress Syndrome

2. Acute Respiratory Failure
   Introduction to Arterial Blood Gas Interpretation
   Understanding Abnormal Blood Gases
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
   Management of the Difficult Airway
   Advanced Concepts in Respiratory Physiology
   Mechanical Ventilation: Introduction to Pediatric Practices
   High-Frequency Ventilation
   Neonatal Respiratory Distress Syndrome
   Introduction to ECMO
   Caring for a Child with a Tracheostomy

3. Acute Respiratory Infection (e.g., pneumonia)
   Neonatal Sepsis
   Meconium Aspiration Syndrome
   Mechanical Ventilation: Introduction to Pediatric Practices
High-Frequency Ventilation
Preventing Ventilator-Associated Pneumonia

4. Air-leak Syndromes
   Neonatal Respiratory Distress Syndrome
   Pneumothorax in the Neonate
   Meconium Aspiration Syndrome
   Nursing Management of Chest Tubes

5. Apnea of Prematurity
   Apnea of Prematurity
   Care of the Small Baby
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation

6. Aspiration
   Meconium Aspiration Syndrome
   Neonatal Sepsis

7. Chronic Conditions (e.g., chronic lung disease/bpd)
   Bronchopulmonary Dysplasia
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
   Neonatal Nutrition

8. Congenital Anomalies
   Comprehensive Assessment of the Neonate
   Congenital Diaphragmatic Hernia
   Esophageal Atresia and TE Fistula
   Gastrochisis and Omphalocele
   Management of the Difficult Airway
   Maternal Factors Affecting the Newborn
   Esophageal Atresia and TE Fistula

9. Failure to Wean from Mechanical Ventilation
   Advanced Concepts in Respiratory Physiology
   Mechanical Ventilation: Introduction to Pediatric Practices
   High-Frequency Ventilation
   Preventing Ventilator-Associated Pneumonia
   Caring for a Child with a Tracheostomy
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation

10. Meconium Aspiration Syndrome (MAS)
    Meconium Aspiration Syndrome
    Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
    Mechanical Ventilation: Introduction to Pediatric Practices
    High-Frequency Ventilation
    Introduction to ECMO
    Vasoactive Medications

11. Persistent Pulmonary Hypertension of the Newborn (PPHN)
    Persistent Pulmonary Hypertension of the Newborn (PPHN)
    Extravuterine Life: Assessment of the Neonate’s Transition
    Extravuterine Life: Fetal to Neonatal Circulation
High-Frequency Ventilation
Advanced Concepts in Respiratory Physiology
Mechanical Ventilation: Introduction to Pediatric Practices
High-Frequency Ventilation
Introduction to ECMO
Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
Vasoactive Medications

12. Pulmonary Hemorrhage
   Acute Respiratory Distress Syndrome
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
   Mechanical Ventilation: Introduction to Pediatric Practices
   High-Frequency Ventilation
   Congestive Heart Failure
   Lower Airway Disease
   Meconium Aspiration Syndrome
   Congenital Heart Disease: Acyanotic Defects
   Introduction to ECMO

13. Pulmonary Hypertension
   Persistent Pulmonary Hypertension of the Newborn (PPHN)
   Extrauterine Life: Assessment of the Neonate’s Transition
   Extrauterine Life: Fetal to Neonatal Circulation
   Maternal Factors Affecting the Newborn
   Advanced Concepts in Respiratory Physiology
   Mechanical Ventilation: Introduction to Pediatric Practices
   High-Frequency Ventilation
   Introduction to ECMO
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
   Vasoactive Medications

14. Respiratory Distress (RDS)
   Introduction to Arterial Blood Gas Interpretation
   Understanding Abnormal Blood Gases
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
   Advanced Concepts in Respiratory Physiology
   Mechanical Ventilation: Introduction to Pediatric Practices
   High-Frequency Ventilation
   Neonatal Respiratory Distress Syndrome
   Care of the Small Baby

15. Thoracic Surgery
   Congenital Heart Disease: Acyanotic Defects
   Congenital Heart Disease: Cyanotic Defects
   Congenital Diaphragmatic Hernia
   Esophageal Atresia and TE Fistula
   Nursing Management of Chest Tubes
   Preventing Surgical Site Infections

16. Transient Tachypnea of the Newborn (TTN)
   Transient Tachypnea of the Newborn
   Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
Comprehensive Assessment of the Neonate
Extrauterine Life: Assessment of the Neonate’s Transition
Extrauterine Life: Fetal to Neonatal Circulation
Maternal Factors Affecting the Newborn

C. Endocrine/Hematology/Gastrointestinal/Renal/Integumentary

1. Endocrine
   a. Adrenal insufficiency
      Hyperbilirubinemia
         Anemia and Polycythemia in the Neonate
         Blood Exchange Transfusion
   b. Hyperbilirubinemia
      Anemia and Polycythemia in the Neonate
      Blood Exchange Transfusion
   c. Hyperglycemia
      Glucose Homeostasis in the Neonate
      Diabetes Insipidus and SIADH
      Maternal Factors Affecting the Newborn
   d. Hypoglycemia
      Metabolic Disorders of the Newborn
      Glucose Homeostasis in the Neonate
      Maternal Factors Affecting the Newborn
   e. Inborn Errors of Metabolism
      Metabolic Disorders of the Newborn
      Comprehensive Assessment of the Neonate

2. Hematology/Immunology
   a. Anemia
      Disseminated Intravascular Coagulation
   b. Coagulopathies (e.g., ITP, DIC, HIT)
      Disseminated Intravascular Coagulation
      Thrombocytopenia: ITP and HIT/T
   c. Immune Deficiencies
      Neonatal Sepsis
   d. Leukopenia
      Neonatal Sepsis
   e. Polycythemia
      Anemia and Polycythemia in the Neonate
      Blood Exchange Transfusion
      Hyperbilirubinemia
   f. Rh/ABO incompatibilities, hydrops fetalis
      Anemia and Polycythemia in the Neonate
      Maternal Factors Affecting the Neonate
      Hyperbilirubinemia
Blood Exchange Transfusion
Congestive Heart Failure

- Thrombocytopenia
  Disseminated Intravascular Coagulation
  Neonatal Sepsis
  Blood Exchange Transfusion
  Thrombocytopenia: ITP and HIT/T

3. Gastrointestinal
   a. Bowel Infarction/Obstruction/Perforation
      Necrotizing Enterocolitis
      Gastrochisis and Omphalocele
      Neonatal Sepsis

   b. Feeding Intolerance
      Neonatal Nutrition
      Esophageal Atresia and TE Fistula
      Gastrochisis and Omphalocele
      Necrotizing Enterocolitis
      Care of the Small Baby

   c. Gastroesophageal reflux
      Neonatal Nutrition
      Nutrition in the Critically Ill Child
      Esophageal Atresia and TE Fistula
      Care of the Small Baby

   d. GI Abnormalities (e.g., omphalocele; gastroschisis, volvulus, imperforate anus, Hirschsprung disease, malrotation, intussusception)
      Comprehensive Assessment of the Neonate
      Gastrochisis and Omphalocele
      Congenital Diaphragmatic Hernia
      Necrotizing Enterocolitis

   e. GI Surgeries
      Gastrochisis and Omphalocele
      Congenital Diaphragmatic Hernia
      Esophageal Atresia and TE Fistula
      General Post-Op Care of the Transplant Patient
      Preventing Surgical Site Infections

   f. Hepatic Failure (e.g., biliary atresia, portal hypertension, esophageal varices)
      Liver Transplant
      General Post-Op Care of the Transplant Patient

   g. Malnutrition and Malabsorption
      Neonatal Nutrition
      Nutrition in the Critically Ill Child
      Necrotizing Enterocolitis
h. Necrotizing Enterocolitis
     Necrotizing Enterocolitis
     Neonatal Nutrition
     Disseminated Intravascular Coagulation
     Neonatal Sepsis

i. Pyloric Stenosis

4. Renal/Genitourinary
   a. Acute Kidney Injury
      Renal Failure in the Pediatric Patient
      Hemodialysis
      Continuous Renal Replacement Therapy
      Neonatal Pharmacokinetics
   
   b. Chronic Kidney Disease
      Renal Failure in the Pediatric Patient
      Hemodialysis
      Continuous Renal Replacement Therapy
   
   c. Congenital Genitourinary Conditions (e.g., hypospadias, polycystic kidney disease, hydronephrosis, bladder extrophy)
      Comprehensive Assessment of the Neonate
      Renal Failure in the Pediatric Patient
   
   d. Genitourinary surgery
   
   e. Infections
      Neonatal Sepsis
      Comprehensive Assessment of the Neonate
   
   f. Life-threatening Electrolyte Imbalances
      Neonatal Nutrition
      Fluid and Electrolyte Management: Laboratory Assessment
      Fluid and Electrolyte Management: Physical Assessment
      Fluid and Electrolyte Management: Physiological Differences
      Fluid and Electrolyte Management: Replacement Therapy
      Fluid and Electrolyte Management: Water Intoxication and Fluid Shift

5. Integumentary
   a. Congenital Abnormalities
      Comprehensive Assessment of the Neonate
   
   b. IV Infiltration
      Neonatal Skin Care
      Pediatric Peripheral IV Care & Management
      Management of PIV Complications in the Pediatric Patient
   
   c. Pressure Injury/ulcer (e.g., device, incontinence, immobility)
      Neonatal Skin Care
Introduction to Pediatric Pressure Injuries
Pressure Injuries in the Pediatric Population: Staging and Care
Pressure Injury Staging Assessment

d. Wounds (non-surgical/surgical)
   Neonatal Skin Care
   Preventing Surgical Site Infections
   Introduction to Pediatric Pressure Injuries
   Pressure Injuries in the Pediatric Population: Staging and Care
   Pressure Injury Staging Assessment

D. **Musculoskeletal/Neurology/Psychosocial**
1. Musculoskeletal
   a. Congenital or Acquired Musculoskeletal Conditions
      Comprehensive Assessment of the Neonate
   
   b. Osteopenia
      Neonatal Nutrition
      Care of the Small Baby

2. Neurological
   a. Agitation
      Maternal Factors Affecting the Neonate
      Pediatric Restraint and Seclusion
      Neonatal Pain Assessment and Management
      Neonatal Abstinence Syndrome
   
   b. Congenital Neurologic Abnormalities (e.g., AV malformation, myelomeningocele, encephalocele)
      Neonatal Cranial Hemorrhage
      Hydrocephalus
      Maternal Factors Affecting the Neonate
      Craniotomy
   
   c. Encephalopathy
      Neonatal Sepsis
      Meningitis and Encephalitis
      Intracranial Pressure Monitoring
   
   d. Head Trauma (e.g., forceps and/or vacuum injury)
      Maternal Factors Affecting the Neonate
      Neonatal Cranial Hemorrhage
      Intracranial Pressure Monitoring
      Craniotomy
   
   e. Hemorrhage (ICH, IVH, subarachnoid)
      Neonatal Cranial Hemorrhage
      Intracranial Pressure Monitoring
      Craniotomy
      Anemia and Polycythemia in the Neonate
f. Hydrocephalus
   *Hydrocephalus*
   *Intracranial Pressure Monitoring*
   *Craniotomy*

g. Ischemic Insult
   *Hypoxic Ischemic Encephalopathy*
   *Maternal Factors Affecting the Newborn*
   *Neonatal Cranial Hemorrhage*
   *Organ and Tissue Donation: The Gift of Life*
   *Intracranial Pressure Monitoring*

h. Neurologic Infectious Disease (e.g., viral, bacterial, fungal)
   *Neonatal Sepsis*
   *Meningitis and Encephalitis*

i. Neurosurgery
   *Hydrocephalus*
   *Intracranial Pressure Monitoring*
   *Craniotomy*

j. Pain (acute/chronic)
   *Neonatal Pain Assessment and Management*
   *Pain Management: Assessment of Pain*
   *Pain Management: Non-Pharmacological Therapies in the Management of Pediatric Pain*
   *Pain Management: Pain Pathophysiology*
   *Pain Management: Pharmacological Management of Pediatric Pain*
   *Procedural Sedation in the Pediatric Patient*

j. Seizure Disorders
   *Status Epilepticus*
   *Neonatal Seizures*

k. Sensory Impairment (e.g., ROP, hearing)
   *Developmental Care of the Newborn*
   *Retinopathy of Prematurity*
   *Care of the Small Baby*

l. Sensory impairment
   *Developmental Care of the Newborn*
   *Retinopathy of Prematurity*
   *Care of the Small Baby*

m. Stress (e.g., noise, overstimulation)
   *Developmental Care of the Newborn*
   *Care of the Small Baby*
   *Neonatal Abstinence Syndrome*
   *Neonatal Pain Assessment and Management*
n. Traumatic Brain Injury (e.g., epidural, physical abuse)
   Maternal Factors Affecting the Newborn
   Child Abuse and Neglect

3. Behavioral/Psychosocial
   a. Abuse and Neglect
      Child Abuse and Neglect
      Intimate Partner Violence
      Trauma-Informed Practice: Concepts, Goals and Principles
      Implementing Trauma-Informed Sensitive Practice
   b. Families in Crisis (e.g., stress, grief, lack of coping)
      Intimate Partner Violence
      Family-Centered Care in the NICU

E. Multisystem
   1. Birth Injuries
      Maternal Factors Affecting the Neonate
      Intracranial Pressure Monitoring
      Hypoxic Ischemic Encephalopathy
   2. Developmental Delays
      Developmental Care of the Newborn
   3. Failure to Thrive
      Nutrition in the Critically Ill Child
      Neonatal Nutrition
      Pediatric Nutritional Overview
      Congestive Heart Failure
      Bronchopulmonary Dysplasia
   4. Healthcare-associated Infections (CLABSI, CAUTI, VAP)
      Preventing Catheter-Associated Urinary Tract Infections (CAUTI)
      Preventing Central Line-Associated Bloodstream Infections (CLABSI)
      Preventing Surgical Site Infections
      Preventing Ventilator-Associated Infections
      Central Lines in the Neonate
   5. Hypotension
      Vasoactive Medications
   6. Infectious Diseases (MDROs; influenza)
      Management of MDROs in the Health Care Setting (Clinical)
      Tuberculosis
      Neonatal Sepsis
   7. Life-threatening Maternal-Fetal Complications
      Maternal Factors Affecting the Newborn
Anemia and Polycythemia in the Neonate

8. Low Birth Weight/Prematurity
   Comprehensive Assessment of the Neonate
   Retinopathy of Prematurity
   Neonatal Nutrition
   Care of the Small Baby

9. Sepsis
   Neonatal Sepsis
   Pediatric Sepsis
   Care of the Pediatric Patient in Shock
   Blood Exchange Transfusion

10. Terminal Conditions (e.g., end of life, palliative care)
    Care of the Dying Child: Care Issues
    Care of the Dying Child: Grief
    Care of the Dying Child: The Dying Process
    Family-Centered Care in the NICU

11. Thermoregulation
    Thermoregulation of the Newborn Infant
    Neonatal Skin Care

17. Toxin/drug exposure (e.g., neonatal abstinence syndrome, fetal alcohol syndrome, maternal or iatrogenic)
    Maternal Factors Affecting the Neonate
    Neonatal Abstinence Syndrome
    Pediatric Toxicology Exposure
    Neonatal Pharmacokinetics

II. Professional Caring and Ethical Practice
1. Advocacy/Moral Agency
   Introduction to Ethics
   Family-Centered Care in the NICU
   Therapeutic Relationships and Professional Behavior

2. Caring Practices
   Introduction to Ethics
   Family-Centered Care in the NICU

3. Response to Diversity
   Introduction to Workplace Diversity
   Family-Centered Care in the NICU

4. Facilitation of Learning
   Precepting: Adult Learners
   Precepting: Preceptor Roles and Responsibilities

5. Collaboration
   Building Effective Teams
Clinical Delegation
Coaching
Empowering Teams
Giving and Receiving Feedback
Therapeutic Relationships and Professional Behavior

6. Systems Thinking
   Building Effective Teams
   Empowering Teams

7. Clinical Inquiry
   Introduction to Research Ethics

Other related and supporting PLS content:

Patient Care
   Assessment of the Critically Ill Child
   Blood and Blood Components Administration
   Blood Components
   Blood Transfusion Reaction
   Caring for the Complex Patient