

**DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES  
AT VILNIUS UNIVERSITY**

<b>Scientific Area/eas, Field/ds of Science</b>	Medical and Health Sciences (M 000): Medicine (M 001)			
<b>Faculty, Institute, Department/Clinic</b>	Medical Faculty, Institute of Clinical Medicine, Clinic of Children's Diseases			
<b>Course unit title</b> (ECTS credits, hours)	<b>Clinical Neonatology</b> (9 credits, 240 hours)			
<b>Study method</b>	<b>Lectures</b>	<b>Seminars</b>	<b>Consultations</b>	<b>Self-study</b>
Number of ECTS credits	-	-	1	8
<b>Method of the assessment</b> (in 10 point system)	Oral exam, 3 theoretical and 1 clinical situation			
<b>PURPOSE OF THE COURSE UNIT</b>				
Study of prevalence, causes, clinical picture, diagnosis and differential diagnosis, prophylaxis and treatment of neonatal congenital anomalies and diseases. Peculiarities of postnatal adaptation and course of the diseases in term and preterm newborn infants. Evidence based neonatology.				
<b>THE MAIN TOPICS OF COURSE UNIT</b>				
<p><b>Perinatal Medicine in Lithuania: results and perspectives.</b> Evolution of neonatal care in Lithuania. Organisation of medical care for pregnant women and newborn baby in Lithuania. Dynamics of perinatal, neonatal and infant mortality in Lithuania. Influence of new technologies on neonatal survival. Possibilities and ways to decrease neonatal and infant morbidity and mortality.</p> <p><b>Peculiarities of postnatal adaptation, feeding and care of term, preterm and postterm newborn infants.</b> Breastfeeding. Benefits of breastfeeding and influence on baby's health. Peculiarities of feeding of the premature baby. Human milk fortification. Formulas for newborn feeding.</p> <p><b>Perinatal hypoxia.</b> Hypoxic-ischemic encephalopathy. Syndrome of the meconial aspiration. Guidelines of neonatal resuscitation.</p> <p><b>Neonatal neurology.</b> Congenital anomalies of the central nervous system (CNS). Birth trauma. Neonatal seizures. Neonatal abstinence syndrome. Diagnosis and treatment of perinatal injury of CNS.</p> <p><b>Neonatal respiratory problems.</b> Congenital anomalies of the respiratory system. Respiratory distress syndrome (RDS) in premature baby. Surfactant administration. Evidence based recommendations for RDS treatment. Apnea of the newborn, diagnosis and treatment. Interstitial lung emphysema. Pneumothorax. Bronchopulmonary dysplasia (chronic lung disease). Neonatal pneumonia. Respiratory syncytial virus infection.</p> <p><b>Neonatal respiratory therapy.</b> Oxygen, benefits and toxicity. Continuous Positive Airway Pressure (CPAP), high flow nasal oxygen therapy, mechanical lung ventilation.</p> <p><b>Neonatal conditions requiring surgical treatment.</b> Congenital gastrointestinal, lung anomalies, abdominal wall defects. Neonatal tumors. Anomalies of the liver. Necrotizing enterocolitis (NEC), diagnosis and treatment. Intestinal bleeding.</p> <p><b>Neonatal cardiology.</b> Peculiarities of postnatal adaptation of the circulation. Congenital heart defects. Prenatal and neonatal diagnosis of congenital heart defects. Patent ductus arteriosus (PDA), diagnosis and treatment. Persistent pulmonary hypertension. Diseases of the myocardium and pericardium. Disturbances of heart rhythm and conductivity. Heart failure. Arterial hypotension and hypertension.</p>				

**Neonatal jaundice.** Differential diagnosis of the neonatal hyperbilirubinemia. Evidence based treatment of neonatal hyperbilirubinemia.

**Neonatal hematology.** Peripheral blood changes during postnatal adaptation. Hemolytic disease. Anemias. Thrombocytopenia. Neonatal leukemia.

**Neonatal nephrology.** Congenital anomalies of the urinary tract. Perinatal diagnosis of urinary tract anomalies, treatment options. Urinary tract infections. Acute renal failure.

**Neonatal endocrine and metabolic diseases.** Hypothyroidism. Adrenogenital syndrome. Osteopenia of prematurity. Rickets. Intrauterine growth retardation and congenital hypotrophy. Diabetic embryo- and fetopathies. Inherited metabolic diseases. Universal neonatal screening.

**Chromosomal diseases.** 13, 18, 21 trisomy. Antenatal and postnatal diagnosis of chromosomal diseases.

**Perinatal infection.** Rubella. Chickenpox. Cytomegaly infection. Herpes virus infection. Congenital syphilis. Toxoplasmosis. Neonatal AIDS infection. Virus hepatitis.

**Neonatal immune system.** Peculiarities of neonatal immune system, role of microbiota. Neonatal vaccination.

**Neonatal infection.** Early and late neonatal sepsis, diagnosis, prophylaxis and treatment. Nosocomial infection. Meningitis. Osteomyelitis. Infection of the skin and umbilical cord. Neonatal COVID-19 infection. Preterm birth and fetal systemic inflammatory response.

**Retinopathy of prematurity (ROP).** Causes, course of the disease, diagnostic criteria and algorithm of examination. Prophylaxis and treatment.

**Neonatal intensive care.** Principles of fluid therapy and parenteral nutrition. New opportunities of diagnostics and monitoring in Neonatal Intensive Care Unit (NICU). Nursing care of critically ill and premature babies.

**Neonatal screening for early disabilities.** Screening and prophylaxis of early neonatal disabilities: neonatal hearing test, red reflex eye examination, pulse oximetric screening for congenital heart disease.

## RECOMMENDED LITERATURE SOURCES

1. Neonatology at Glance T.Lissauer, A.A.Fanaroff, L.Miall, J.Fanaroff Oxford, Wiley-Blackwell, 2020; ISBN 9781119513193;
2. Assisted ventilation of the neonate J.P.Goldsmith, E.H.Karotkin, M.Kesztler, G.K.Suaresh 6th ed. 2017 Elsevier; ISBN: 978-0-323-39006-4;
3. Manual of neonatal respiratory care S.M.Donn, S.K.Sinha 4th ed. 2017, Springer; ISBN: 978-3-319-39837-2;
4. Avery's diseases of the newborn C.A.Gleason, S.E.Juul 10th ed 2018 Elsevier; ISBN: 978-0-323-40139-5;
5. Volpe's neurology of the newborn J.J.Volpe 6th ed. 2018 Elsevier; ISBN: 978-0-323-42876-7;
6. Remington and Klein's Infectious diseases of the fetus and newborn infant 8th ed. 2016 Elsevier; ISBN: 978-0-323-24147-2;
7. MacDonald's atlas of procedures in neonatology J.Ramasethu, S.Seo 5th ed. 2020 Wolters Kluwer; ISBN: 978-1-4963-9425-5;
8. Klaus and Fanaroff's care of the high-risk neonate A.A.Fanaroff, J.M.Fanaroff 6th ed. 2013 Elsevier; ISBN: 978-1-4160-4001-9;
9. Fetal and neonatal physiology R.A. Polin, S.H.Abman, D.H.Rowitch, W.E.Benitz, W.W.Fox 5th ed. 2017 Elsevier; ISBN: 978-0-323-35214-7;
10. Essential neonatal medicine S.Sinha, L.Miall, L.Jardine 6th ed. 2018 Wiley Blackwell; ISBN: 978-1-1192-3581-1;
11. Archives of Disease in Childhood Fetal and Neonatal ed An Official Journal of the Royal College of Paediatrics and Child Health;
12. [fn.bmj.com](http://fn.bmj.com) Neonatology Karger Medical and Scientific Publishers  
[www.karger.com/NEO](http://www.karger.com/NEO)

<b>CONSULTING LECTURERS</b>
1. <u>Coordinating lecturer</u> : Arūnas Liubšys, (Assoc. Prof. Dr.).
2. Ramunė Vankevičienė (Assist. Prof. Dr.).
3. Ingrida Pilypienė (Assist. Prof. Dr.).
4. Ieva Paulavičienė (Assist. Prof. Dr.).
<b>APPROVED:</b>
By Council of Doctoral School of Medicine and Health Sciences at Vilnius University: 29 <sup>th</sup> of September 2022
Chairperson of the Board: Prof. Janina Tutkuvienė