

UNIVERSITY OF BELGRADE
FACULTY OF MEDICINE
PhD STUDIES

NAME OF THE MODULE: Fetal programming and prenatal prevention of adult life diseases

CONTENT OF THE PROGRAM AND COURSES

MANDATORY COURSES

Fetal programming and prenatal prevention of adult life diseases (22 classes)

Manager: Prof. Miroslava Gojnić Dugalić, MD PhD

1. Struggle of the fetus to overcome hypoxia and hypoxemia, possible consequences - Prof. Miroslava Gojnić Dugalić, MD PhD (1 class)
2. Fetal programming – the effect of genetic and epigenetic markers of the mother and the father - Prof. Sonja Pavlović, MD PhD (Torlak 1 class)
3. Uteroplacental circulation and endothelial dysfunction - Prof. Miroslav Radenković, MD PhD (1 class)
4. The administration of antioxidants during pregnancy – effects to the pregnant woman and the fetus - Prof. Marija Matić, MD PhD (1 class)
5. Placenta as an organ, indicator of the condition of a mother, fetus, neonate - Prof. Dejan Oprić, MD PhD
6. Early detection of fetal anomalies, spectrums of prenatal diagnosis, moral approaches - Prof. Svetlana Vrzić Petronijević, MD PhD
7. Methods for overcoming premature delivery, possibility for artificial fetal maturation, healthy offspring from premature delivery - Prof. Miroslava Gojnić Dugalić, MD PhD
8. Diabetes – modern age disease, predispositions for diabetes in adult age - Prof. Aleksandra Jotić, MD PhD
9. Diagnosing gestational diabetes by interpreting fetus and placenta conditions - Prof. Miroslava Gojnić Dugalić, MD PhD
10. Hypertensive syndrome, complications in pregnant patients - Prof. Vesna Stojanov, MD PhD
11. The power of preventing preeclampsia, pathogenesis and biomarkers – Prof. Lana McClements, MD PhD, University of Technology Sydney
12. New approaches to treating hypercholesterolemia during pregnancy - Prof. Katarina Lalić, MD PhD
13. Birth rate, mortality, morbidity – Prof. Miloš Petronijević, MD PhD
14. Providing offspring to a patient after malignant diseases – Prof. Katarina Stefanović, MD PhD
15. Prenatal genetic interventions, possible benefits and dangers - Prof. Oliver Stojković, MD PhD
16. Pharmacological programming of the fetus during the first trimester - Prof. Milica Bajčetić, MD PhD
17. Fetal pharmacogenetics – future of pharmacotherapy during pregnancy – Prof. Sonja Pavlović, MD PhD

18. Neural axis of the pregnancy, mother, placenta, fetus - Saša Radovanović, Associate Research Professor (Institute of Medical Research)
19. Pregnancy immunology (mother, fetus, placenta), modern approach to vaccination, advantages for the mother and the offspring - Prof. Dušan Popadić, MD PhD
20. Efficient prevention of preterm delivery by progesterone - Prof. Gian Carlo Di Renzo, MD PhD, University of Perugia, Director, Visiting Professor
21. Prevention of subsequent offspring risks by measure and type of therapy during pregnancy - Prof. Miroslava Gojnić Dugalić, MD PhD
22. Stem cells in obstetrics and oncology - Prof. Wolfgang Holzgreve, MD PhD

Fetal growth and development and fetus as a patient (18 classes)

Manager: Prof. Svetlana Vrzić Petronijević, MD PhD

1. The role of placentation and remodeling of uteroplacental circulation in fetal programming - Milica Jovanović Krivokuća INEP/Prof. Svetlana Vrzić Petronijević, MD PhD
2. Physiology and pathophysiology of early fetal development – Prof. Svetlana Vrzić Petronijević, MD PhD
3. The significance of non-invasive prenatal testing and the role of combined biochemical and ultrasound screening to genetic disorders of the first and second trimester in modern fetal medicine – Prof. Svetlana Vrzić Petronijević, MD PhD
4. Genetic counseling, clinical genetics and interdisciplinary approach to prenatal diagnosis – Prof. Goran Čuturilo, MD PhD
5. The basic principles of fetal growth and development monitoring – clinical and ultrasonographic parameters – Prof. S. Vrzić Petronijević, MD PhD
6. Infections during pregnancy and their influence to the course of pregnancy and perinatal outcome - Prof. Slobodanka Đukić, MD PhD
7. Intrauterine fetal growth restriction – Prof. Miloš Petronijević, MD PhD
8. Fetal echocardiography and its role in the evaluation of fetal condition – Prof. Svetlana Vrzić Petronijević, MD PhD
9. Cardiological aspect of fetal echocardiography – the significance of interdisciplinary approach in the diagnosis, prognosis and treatment of fetal congenital heart defects – Prof. Vojislav Parezanović, Pediatric Cardiologist
10. Metabolic disorders and their influence to fetal programming – Prof. Miroslava Gojnić Dugalić, MD PhD
11. Fetal CNS development particularities – Prof. Srđan Antić, MD PhD
12. Postnatal neurological development of children born from high-risk pregnancies – Prof. Nataša Cerovac, MD PhD, Pediatric Neurology
13. Multiple pregnancies and the influence on fetal growth and development – Prof. Miloš Petronijević, MD PhD
14. Moral and medical-legal aspect of prenatal diagnosis, procedure after prenatal diagnosis of fetal disorder – Prof. Svetlana Vrzić Petronijević, MD PhD
15. Possibilities and range of fetal therapy - Prof. Svetlana Vrzić Petronijević, MD PhD
16. Indications for fetal surgery and neonatal treatment of prenatally diagnosed anomalies of gastrointestinal tract – Prof. Sanja Sindić, MD PhD, University Children's Hospital Tiršova
17. Particularities of postnatal treatment of developmental anomalies of genitourinary tract and intersexualism – Prof. Miroslav Đorđević, MD PhD

18. Fetal development, perinatal outcome in pregnancies burdened by malignancies – Prof. Aleksandar Stefanović, MD PhD

Personalized approach to delivery management in pathological pregnancies

Manager: Prof. Miloš Petronijević, MD PhD (16 classes)

1. Etiopathogenesis and evaluation of habitual miscarriages – Prof. M. Petronijević, MD PhD
2. Intrauterine fetal growth restriction and specific factors influencing the mode of delivery - Prof. M. Petronijević, MD PhD
3. Personalized approach to delivery in pregnancy complicated by hypertensive syndrome - Prof. S. Vrzić Petronijević, MD PhD
4. Specific approaches to managing delivery in preterm and post-term pregnancy and their influence to perinatal outcome - Prof. M. Petronijević, MD PhD
5. Analgesia and anesthesia in obstetrics - Prof. T. Mostić, MD PhD
6. Modern delivery management – Prof. M. Petronijević, MD PhD
7. Early neonatal care and its significance in postnatal development - Prof. T. Nikolić, MD PhD
8. Dystocia as a possible cause of postnatal complications - Prof. M. Petronijević, MD PhD
9. Contribution of ultrasound intrapartal diagnosis in improving perinatal outcome -Prof. M. Petronijević, MD PhD
10. Position of surgical delivery in modern obstetrics and its implications to distant postnatal prognosis - Prof. M. Petronijević, MD PhD
11. The role of Cesarean Section in perinatal outcome of term and preterm pregnancies - Prof. M. Petronijević, MD PhD
12. Particularities of delivery of the fetus in breach presentation – Prof. M. Petronijević, MD PhD
13. Multidisciplinary approach to puerperium as high-risk period - Prof. M. Gojnić, MD PhD
14. Postpartal hemorrhage, causes and therapeutic approaches – Prof. S. Kadija, MD PhD
15. New strategies in prevention of maternal mortality - Prof. M. Petronijević, MD PhD
16. Influence of fetal monitoring in pregnancy and delivery to immediate and long-term postnatal outcome - Prof. S Vrzić Petronijević, MD PhD

ELECTIVE COURSES

Investigating the influence of maternal disease to the health of neonate

(17 classes) (Maternal – fetal concept)

Prof. Miroslava Gojnić, MD PhD

1. Specific arrhythmia conditions in women during pregnancy, scientific and clinical prism - Prof. Siniša Pavović, MD PhD
2. Influence of cardiac insufficiency, cardiomyopathy to the mother, fetus, and neonate - Prof. Arsen Ristić, MD PhD
3. Scientific and clinical significance of application of insulin pump to the health of mother, fetus, neonate - Prof. Aleksandra Jotić, MD PhD

4. Understanding and preventing consequences of diabetes to the fetus, consequences to the health of neonate - Prof. Miroslava Gojnić Dugalić, MD PhD
5. New scientific and practical approach to oral anti-diabetic medications, effects to the mother, fetus, neonate - Prof. Tanja Milačić, MD PhD
6. Obesity as a problem of science and clinical practice in overcoming pathologies of the mother, fetus, neonate – Assistant Professor Ljiljana Lukić, MD PhD
7. Thyroid gland disorders and pregnancy, preventing of autism and diseases in children - Prof. Miloš Žarković, MD PhD
8. Hematological conditions, from thrombophilias to leukemia, approach to the mother, fetus, and neonate - Prof. Milena Todrović Balint, MD PhD
9. Urgent surgical conditions and pregnancy – particularities of diagnosis, specific approach to the mother and fetus - Prof. Slavko Matić, MD PhD
10. Covid and pregnancy – cardiovascular pathology of the mother, effects to the fetus and neonate - Prof. Marija Zdravković, MD PhD, Bežanijska kosa
11. Urological and nephrological complications and pregnancy – prediction, prevention, therapy - Prof. Miodrag Aćimović, MD PhD, Assistant Professor Uroš Babić, MD PhD
12. Correlations and interpretation of eye blood vessels changes and uteroplacental unit - Prof. Dejana Risimić Simeunović, MD PhD
13. Understanding the significance of active approach to urgent conditions in obstetrics - Prof. Svetlana Vrzić Petronijević, MD PhD
14. Urgent reproductive care in obstetrics – Prof. Miloš Petronijević, MD PhD
15. To prevent and treat peripartal hemorrhage, scientific and clinical approach - Prof. Saša Kadija, MD PhD
16. Prevention and treatment of shock and DIC in obstetrics – mother, fetus, neonate – Associate Professor Ivana Likić Lađević, MD PhD
17. Modern anesthesia influence to the mother and fetus - Prof. Tatjana Ilić Mostić, MD PhD

Investigating placental disorders

Prof. Marija Matić, MD PhD (Biochemistry)

1. Embryology, spectrum of organ anomalies according to stages of development – Prof. Svetlana Vrzić Petronijević, MD PhD
2. Placental physiology, regulation of uteroplacental and fetoplacental circulation - Prof. Dejan Nešić, MD PhD
3. Pathophysiology of placenta, umbilical cord, fetal membranes - Prof. Silvio de Luka, MD PhD
4. Endocrine role of placenta and fetus - Prof. Dejan Nešić, MD PhD
5. Clinical significance of microscopic examination of the placenta, fetal membranes and umbilical cord - Prof. Dejan Oprić, MD PhD, Assistant Prof. Danilo Obradović, MD PhD
6. Immunology during pregnancy, lactation period, puerperium - Prof. Miloš Petronijević, MD PhD
7. Placenta and communication of mother and fetus – comparison of human and animal population - Prof. Danica Marković, PhD (Faculty of Veterinary Medicine, Belgrade University)
8. Placentation – effects to pregnancy and neonate - Prof. Miroslava Gojnić Dugalić, MD PhD

9. Modern approach to autoimmune disease of the mother – changes in the fetus and neonate – Assistant Prof. Goran Radunović, MD PhD, Institute of rheumatology
10. Toxoplasmosis in pregnancy and fetal development - Prof. Olgica Đurković Đaković, MD PhD, Senior Scientific Associate of the Institute of Medical Research
11. Predicting complications of the fetus and neonate by interpreting uteroplacental, fetoplacental and fetal circulation - Prof. Miroslava Gojnić, MD PhD

Media and legal approach to research in modern perinatology (13 classes) Prof. Dejana Stanisavljević, MD PhD

1. Free access to information - Prof. Dejana Stanisavljević, MD PhD
2. Good scientific practice of data management in research in perinatology - Nataša Ristić Milićević
3. The significance of obstetrics cohorts in researching risk factor for diseases in newborn population - Prof. Tatjana Pekmezović, MD PhD
4. Modern healthcare information system - Prof. Svetlana Vrzić Petronijević, MD PhD
5. Burden of the disease due to the prenatal maternal mortality – Prof. Milena Šantrić, MD PhD
6. Risk factors for burden to the society due to disease and preterm maternal mortality - Prof. Milena Šantrić, MD PhD
7. Public healthcare aspects in reproductive health of vulnerable population - Prof. Vesna Bjegović, MD PhD
8. Legal aspects of perinatology, significance of maintaining documentation - Prof. Miloš Petronijević, MD PhD
9. Judicial and medical aspects in perinatology - Prof. Tatjana Atanasijević, MD PhD
10. Personalized approach to choosing physical activity and preventing pathological conditions in pregnancy - Prof. Sanja Mazić, MD PhD
11. Necessity of psychological support – the role of psychotherapist - Prof. Igor Pantić, MD PhD
12. Balancing of minerals, vitamins and proteins according to individual condition of pregnant woman - Prof. Miroslava Gojnić Dugalić, MD PhD
13. Invited lecturer: Srđan Bunjevac, Faculty of electrical engineering, IT, Software of medical applications in healthcare
14. Invited lecturer: Danijela Davidov Kesar, Faculty of Political Sciences, Belgrade University: Necessity of objective modern media approach to general population

Investigating pregnancies from IVF
Prof. Jelena Stojnić, MD PhD

1. Pregnancy after IVF – Prof. Miroslava Gojnić Dugalić, MD PhD
2. Effects of cryopreservation of eggs and embryos to the neonate development – Assistant Professor Jelena Stojnić, MD PhD
3. Possibilities to preserve fertility – Prof. Katarina Stefanović, MD PhD
3. Risks to the mother, fetus and neonate in successful pregnancies with hyper stimulation – Assistant Professor Jelena Micić, MD PhD
4. Reproductive medicine and its role in fetal programming – Prof. Svetlana Vrzić Petronijević, MD PhD

5. Complications of pregnancies after embryo transfer of one or more embryos – Assistant Professor Lidija Tulić, MD PhD
6. Obstetrics particularities in IVF pregnancies - Prof. Miloš Petronijević, MD PhD
7. Improving the course and outcome of pregnancy after endoscopic procedures – Prof. Jovan Bila, MD PhD
8. Pre-implant genetic testing as way of fetal programming – Prof. Oliver Stojković, MD PhD

ENROLLMENT REQUIREMENTS

GENERAL:

The average grade from all previous levels of study to be at least 8.00

Knowledge of English

Appropriate computer skills

Recommendations related to scientific research (desirable)

SPECIFIC:

Students with completed integrated academic studies in medical sciences lasting 6 years (360 ECTS) who have shown a sense of scientific research work in the relevant field, as evidenced by publications in which the candidate is the author (one paper in journal cited in the Medline database in which the candidate is the author).

ADVISORY BOARD

Prof. Miroslava Gojnić Dugalić, MD PhD, Full Professor FMUB

Prof. Miloš Petronijević, MD PhD, Full Professor FMUB

Prof. Svetlana Vrzić Petronijević, MD PhD, Associate Professor FMUB

Prof. Katarina Stefanović, MD PhD, Full Professor FMUB