Course Information Sheet

Higher education institution: *Slovak Medical University in Bratislava*	
Faculty: *Faculty of Medicine*	
Course code: *GM 054*	**Course title:** *Embryology*

Type, extent and method of educational activity:
Number of hours per semester: 28
Lectures: 14 h/1 h per week
Practical excercises: 14 h/1 week
(Total work load of the student is 75 h)
Method of education aactivity: full-time study (distance study)[1]
Form of the study: full-time

Number of credits: *3*

Recommended semester/trimester study: *4th*

Level of higher education study: *1. + 2. level*

Prerequisite courses: *Medical biology*

Requirements for completion of the course:
The criterion for successful completion of the course (exam) is 100% participation in teaching (1 justified absence is tolerated) and successful completion of the exam. The final exam consists of two parts - a written test and an oral part of the exam (with the drawing of questions from two areas - embryogenesis and organogenesis). The criterion for successful completion of the course is successful completion of both parts. Minimum success rate: 60%. Rating: A: 95% - 100%, B: 88% - 94%, C: 77% - 87%, D: 66% - 76%, E: 60% - 65%, Fx: less than 60%. Minimum success rate: E.
The student's workload in indirect teaching is 47 hours (includes preparation for teaching, preparation for written partial tests, preparation for the final exam).

Learning outcomes:
Human embryology is the branch of medicine that studies the development of gametes (sex cells), fertilization, and development of embryos and fetuses. Additionally, embryology is the study of congenital disorders that occur before birth. The study of embryology allows medical students to acquire knowledge about the development of tissues and organs, and also provides information about birth defects, assisted reproduction techniques and clinical embryology.

Brief content of the course (syllabus):
Introduction to Embryology. Spermiogenesis and oogenesis. Ultrastructure of spermatozoa and oocyte during ovulation. Fertilization. Cleavage of the zygote and development of the blastocyst. Implantation of the blastocyst into endometrium. Decidual reaction. Clinical embryology and an assisted reproduction. Bilaminar and trilaminar germ disc. Amniotic cavity, yolk sac and chorionic cavity. Formation of the twins and their fetal membranes. Somites. Development of notochord and neural tube (neurulation). Neural crest and its derivatives. Development and functional morphology of placenta. Placentar barrier. Blood vessels and heart formation. Development of the cardiovascular system. Development of large arteries and abnormalities of the cardiovascular system. Circulatory changes at birth. Development of vertebrae and spinal cord. Development of limbs. Development of gastrointestinal system and its abnormalities. Development of respiratory system and its abnormalities. Development of urinary system and its abnormalities. Development of genital system and abnormalities. Pharyngeal arches and the development of face and neck. Development of ear. Development of eye. Development of skin and its derivatives. Development of central nervous system and autonomous nervous system. Neural tube defects.

Recommended literature:
Schoenwolf GC, Bleyl SB, Brauer PR, Francis-West PH. Larsen´s Human Embryology. 6th Edition. Philadelphia: Elsevier Churchill Livingstone, 2021, 560 pp.
Moore KL, Persaud TVN, Torchia MG. The Developing Human. Clinically Oriented Embryology. 11th Edition. Philadelphia: Elsevier, 2016, 522 pp.
Carlson B. Human Embryology and Developmental Biology. 6th Edition. Philadelphia: Elsevier Saunders 2018, 496 pp.
Sadler TW. Langman´s Medical Embryology. 14th Edition. Philadelphia: Wolters Kluwer Lippincott Williams a Wilkins, 2018, 456 pp.

Language requirements: *English*

[1] *§ 108e ods. 2 zákona č.131/2002 Z.z. o vysokých školách*

Notes:
The course runs in Slovak and English language.

Course assessment
Assessed students in total: *78*

A	B	C	D	E	FX
24 %	17 %	14 %	10 %	21 %	14 %

Lecturers:
Prof. MUDr. Štefan Polák, CSc.
MUDr. Mgr. Michal Miko, PhD.
MUDr. Renáta Mikušová, PhD.

Date of last modification: *16. 11. 2021*

Approved by: *person responsible for realization, development and ensuring of the study program quality*
prof. MUDr. Iveta Šimková, CSc.

[1] *§ 108e ods. 2 zákona č.131/2002 Z.z. o vysokých školách*