

MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY
DEPARTMENT OF HISTOLOGY, CYTOLOGY AND EMBRYOLOGY



APPROVED

Acting Vice Rector for Science and Education
Svetlana KOTYUZHYNKA
1 September 2022

**CURRICULUM (WORKING PROGRAM) ON ELECTIVE
EDUCATIONAL DISCIPLINE
« THE BASICS OF GENERAL MEDICAL EMBRYOLOGY »**

Level of higher education: second (master's)

Field of knowledge: 22 "Health"

Specialty: 222 " Medicine "

Educational and professional program: Medicine

2022

The program is based on the educational-professional program "Medicine", training of specialists of the second (master's) level of higher education in the specialty 222 "Medicine" in the field of knowledge 22 "Health", approved by the Academic Council of ONMedU, (Protocol № 9 from 23 June 2022)

Developers:

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Approved at the meeting of the Department of Histology, Cytology and Embryology
Protocol № 21 dated 27.06.2022

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Program is approved by the Methodology Cycle Committee on biomedical disciplines of ONMedU

Protocol № 6 dated 30.06.2022

Head of the Methodology Cycle Committee
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Olena APPELHANS

Approved at the meeting of the University Central Coordination and Methodology Council of ONMedU

Protocol № dated " " 20

Head of the Department

(signature)

Approved at the meeting of the University Central Coordination and Methodology Council of ONMedU

Protocol № dated " " 20

Head of the Department

(signature)

1. Description of the primary discipline:

The name of indicators	Field of knowledge, specialty, educational and professional program, level of higher education	Characteristics of the discipline	
		<i>Daytime form of study</i> <i>Obligatory</i>	
Total amount:	Field of knowledge: 22 "Health" Specialty: 222 "Medicine" Level of higher education: second (master's)	<i>Preparation year</i>	2
Credits – 3		<i>Semester</i>	4
Hours - 90		<i>Lectures</i>	0 hours
		<i>Practical</i>	30 hours
		<i>Independent work</i>	60 hours
		<i>incl. individual tasks:</i>	0
		<i>Final control form</i>	Credit class

Description of the academic discipline (abstract)

The program of the optional educational discipline deals with the main aspects of antenatal human development, their practical importance for clinical medicine, the possibilities of preventing birth defects, as well as the remote consequences of the influence of internal and external environmental factors on the embryo and fetus.

The program of a selective educational discipline determines the prerequisites for access to training, the orientation and main focus of the program, the volume required for students, the list of general and special (professional, subject) competencies, the normative and variable content of specialist training, formulated in terms of learning outcomes, and control requirements quality of higher education.

The optional educational discipline "Fundamentals of general medical embryology" consists of 3 ECTS credits (90 hours).

The subject of the selective educational discipline "Fundamentals of General Medical Embryology" is the main stages of antenatal human development, the clinical significance of their disorders, the consequences of the influence of external and internal environmental factors at different stages of pregnancy, means of preventing congenital malformations

Interdisciplinary connections: based on the study of histology, cytology and embryology, normal and pathological clinical anatomy, clinical chemistry, general and clinical pathological physiology,

microbiology, virology and immunology, pharmacology, general pharmacy and clinical pharmacology, infectious diseases, family medicine, internal medicine, which involves integration with these disciplines and forms the ability to apply knowledge in the process of further education and professional activity.

2. The purpose and tasks of the optional educational discipline "Fundamentals of general medical embryology"

1.1 The purpose of the selective educational discipline "Fundamentals of general and special medical embryology" is to master a set of knowledge about the main stages of antenatal human development, factors.

1.2 The main tasks of the optional educational discipline are:

- 1) providing students with knowledge about the main stages of antenatal human development (progenesis, fertilization, gastrulation, histo- and organogenesis);
- 2) providing students with knowledge about possible disorders that occur during various stages of antenatal development, their clinical manifestations and the possibilities of prevention and/or correction.

1.3 Competences and learning outcomes, the formation of which contributes to the discipline (relationship with the normative content of the training of higher education applicants).

According to the requirements of the educational and scientific programs of specialties, the discipline ensures that graduate students acquire the following competencies: - integral:

The ability to solve complex problems, conduct independent original scientific research and carry out pedagogical, professional, research and innovative activities in the field of medicine.

- general (GC):

GC 1. The ability to improve and develop one's own intellectual and general cultural level.

GC 3. Skills for finding, processing and analyzing information from various sources.

GC 5. The ability to identify, pose and solve problems, the ability to generate new ideas.

GC 7. Ability to plan and manage time.

- special (professional, subject, SC):

SC2. Ability to determine the need for additional knowledge in the field of scientific research, formulate research questions, generate scientific hypotheses in the field of medicine.

SC5. Possession of modern methods of scientific research.

SC6. The ability to conduct correct analysis and generalization of the results of scientific research.

SC10. Organize and implement pedagogical activities in higher medical education, manage the scientific and pedagogical (scientific) team.

3. Learning outcomes (learning outcomes):

PRN1. Apply scientific and professional knowledge; to formulate ideas, concepts for the purpose of use in educational and scientific work.

PRN3. Interpret and analyze information, correctly evaluate new and complex phenomena and problems with scientific accuracy critically, independently and creatively.

PRN5. Formulate scientific hypotheses, the purpose and tasks of scientific research.

PRN6. Analyze and synthesize scientific data independently and critically.

Learning outcomes for the discipline.

The student should know:

- Characteristics of the main stages of antenatal human development; - Types of disorders occurring at different stages of progenesis and embryogenesis, methods of their prevention;
- Distant consequences of the influence of external and internal environment factors on the human body in the process of embryonic development.

The student should be able to:

- Recognize the characteristic structures of the embryo/fetus at various stages of antenatal development;
- To analyze the cause-and-effect relationships between the effect of internal and external environmental factors on the embryo/fetus during pregnancy and some diseases in the postnatal period.

4. Structure of subject

Name of content modules and topics	Number of hours		
	Full-time		
	In total	Including	
		Seminar	IWT
Embryology as a science. Meaning for medicine. Progenesis. Features of the development of male germ cells.	6	2	4
2. Progenesis. Features of the development of female germ cells.	6	2	4
3. Basic concepts of embryology.	6	2	4
4. Comparative embryology of chordates, development of the lancet.	6	2	4
5. Features of the development of amphibians, fish and birds.	6	2	4
6. Features of the development of mammals.	6	2	4
7. Development of the human embryo-1. (Ovulation, fertilization, cleavage, blastulation)	6	2	4
8. Development of the human embryo -2. (Gastrulation, implantation)	6	2	4
9. Human extra-embryonic organs (Yolk sac, allantois, amnion, chorion.)	6	2	4
10. Formation of placenta and umbilical cord.	6	2	4
11. Differentiation of embryonic leaves of a human embryo. Sources of tissue and organ development.	6	2	4
12. Critical periods of human development.	6	2	4
13. Anomalies of human development.	6	2	4
14. Importance of embryology for practical	6	2	4

medicine.			
15. Control of theoretical knowledge. Credit class. Final control of mastering the discipline.	6	2	4
Total:	90	30	60

5. Topics of lectures / seminars / practical / laboratory classes

5.1. Topics of lectures

Lectures are not provided.

5.2. Topics of seminar classes of the optional educational discipline "Fundamentals of general medical embryology"

№	Topic	Number of hours
1.	Embryology as a science. Meaning for medicine. Progenesis. Features of the development of male germ cells.	2
2.	2. Progenesis. Features of the development of female germ cells.	2
3.	3. Basic concepts of embryology.	2
4.	4. Comparative embryology of chordates, development of the lancet.	2
5.	5. Features of the development of amphibians, fish and birds.	2
6.	6. Features of the development of mammals.	2
7.	7. Development of the human embryo-1. (Ovulation, fertilization, cleavage, blastulation)	2
8.	8. Development of the human embryo -2. (Gastrulation, implantation)	2
9.	9. Human extra-embryonic organs (Yolk sac, allantois, amnion, chorion.)	2
10.	10. Formation of placenta and umbilical cord.	2

11.	11. Differentiation of embryonic leaves of a human embryo. Sources of tissue and organ development.	2
12.	12. Critical periods of human development.	2
13.	13. Anomalies of human development.	2
14.	14. Importance of embryology for practical medicine.	2
15.	15. Control of theoretical knowledge. Credit class. Final control of mastering the discipline.	2
	Total	30

5.3. Topics of practical classes

Practical classes are not provided.

5.4. Topics of laboratory classes

Laboratory classes are not provided.

6. Independent student work

№	Types IWT	Number of hours
1	Regulation of ovarian - menstrual cycle.	2
2	Causes of male and female infertility.	2
3	Anovulation, failed implantation.	3
4	Neural tube defects. Causes of occurrence, means of prevention.	2
5	Congenital defects of the development of ZhSS.	2
6	Congenital malformations of the eye and inner ear. Causes of occurrence.	6
7	Congenital malformations of the organs of the respiratory system.	4
8	Neurohumoral regulation of the mucociliary apparatus. Surfactant.	2
9	Congenital malformations of the organs of the urinary system.	4
10	Congenital malformations of heart rate organs.	2
11	Congenital cleft lip and palate. Anomalies of teeth development.	4

12	Congenital malformations of the cardiovascular system.	2
13	Prenatal diagnosis of congenital malformations.	2
	Total hours	60

7. Teaching methods

The teaching of a selective academic discipline in seminar classes is provided by methodical developments for each practical class, visual teaching aids for each class (presentations, video lectures), the information resource of the department, and structured skill control algorithms.

Independent work in the study of a selective academic discipline is ensured by methodical developments for independent work, visual teaching aids (video lectures, presentations), information resource of the department, topics of independent work, structured algorithms of skill control.

Final control is not carried out, the study of the discipline ends with a test at the last practical session.

8. Control methods:

- entrance and final knowledge level control tests on the topic of practical training;
- oral answer to questions based on the material of the current topic;
- solving typical and atypical clinical situational problems; - control of practical skills;
- final assessment.

9. Scheme of accrual and distribution of points received by students Current control.

Evaluation of the success of the study of subjects of the discipline is carried out according to the traditional 4-point scale. At the end of the study of the discipline, the current success rate is calculated as the average current score, that is, the arithmetic average of all the grades received by the student according to the traditional scale.

Final control. The study of the academic discipline ends with a test. Credit will be given to students who have not missed lectures and practical classes or have completed missed classroom classes and have an average grade of at least 3.00.

10. Recommended literature

Main (basic):

1. Medical embryology according to Langman [translation of the 8th American edition from English] / Sadler T.V. - Lviv: Nautilus, 2012.
2. Medical embryology with the basics of teratology / Silkina Yu; under the editorship Prof. Yu. Tchaikovsky. – Vinnytsia: New Book, 2013 –

Auxiliary

1. Current Research in Embryology / edited by S. Globig. - Florida: Apple Academic Press, 2012
2. Textbook of Clinical Embryology / edited by K. Coward, D. Wells. - New York: Cambridge University Press, 2013

11. Information resources

1. Hill, M.A. (2021, April 20) Embryology Main Page. Retrieved from https://embryology.med.unsw.edu.au/embryology/index.php/Main_Page