MINISTRY OF HEALTH OF UKRAINE
Odesa National Medical University

Faculty of Medicine № 1

Department of histology, cytology, embryology and pathological morphology with a course in forensic medicine

Course syllabus
THE BASICS OF GENERAL MEDICAL EMBRYOLOGY

Course length	3 ECTS credits, 90 hours
Semester, year	III semester, 2nd year of study
Days, time, location	Monday - Friday from 8.30 to 16.12 ONMedU main building (Odesa, вул. Olhiivska str., 4b): according to the schedule of the Department of histology, cytology, embryology and pathological morphology with a course in forensic medicine
Lecturers	Tiron Oksana Ivanivna Candidate of Medical Sciences, docent, head of the Department 0672827333 chekina.o@ukr.net Kuvshinova Irina Ivanovna Candidate of Medical Sciences, docent 0634161124 Irinakuvshinova.2000@gmail.com Breus Volodymyr Yevhenovych Candidate of Medical Sciences, senior teacher 0675564787 breusve@ukr.net Markova Olena Olehivna Candidate of Medical Sciences, senior teacher 0682544959 alenushkamarkova71@gmail.com Lyashevska Oleksandra Oleksandrivna head teacher., assistant 0663213677 alexandra.lyashevskaya@gmail.com
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Location	The main building of ONMedU Odessa, Olgievskaya Street, 4b
Consultations	Off-line and on-line: Monday, Tuesday, Wednesday : 1 shift – 14.00 -16.00

COMMUNICATION

Communication with PhD students occurs via off-line meetings. In case of shift to distance learning it will be provided via e-mail, cell-phones and online platform including Microsoft Teams.

COURSE ANNOTATION

Study subject of the discipline

The study subject of the optional educational discipline 'The basics of General and Systems-based Medical Embryology' is the crucial stages of human prenatal development, the clinical significance of their disruption, the consequences of the impact of various external and internal factors during different pregnancy terms, prevention of congenital malformations.

Course pre-requisites and post-requisites (The place of the discipline in the educational program)

The curriculum of the discipline 'The basics of General and Systems-based Medical Embryology' is based on the knowledge of Histology, Cytology, Embryology, Anatomy, Pathological Anatomy, Clinical Chemistry, General and Clinical Pathophysiology, Microbiology, Virology, Immunology, Pharmacology, General Pharmacy and Clinical Pharmacology, Infectious diseases, Family Medicine and Internal Medicine. It presumes integration with the disciplines mentioned above and development of the ability to apply knowledge in the process of further education and professional activity.

Aim of the course

The aim of the of the optional educational discipline 'The basics of General and Systems-based Medical Embryology' is to gain complex knowledge about main stages of human prenatal development, factors which may disrupt them, teratogenic effects of infectious agents, certain drugs and toxic substances and apply this knowledge in research, to solve meaningful problems in professional field, science, performance of functional duties connected with treatment of pregnant women and women of reproductive age. These is expected to reduce incidence or prevent some congenital malformations and consequently reduce prenatal and neonatal mortality.

Tasks of the discipline:

1) providing students with knowledge about main stages of human prenatal development (progenesis, fertilization, gastrulation, histo- and organogenesis);
2) providing students with knowledge about potential disruptions which may occur during different stages of prenatal development, their clinical manifestations and possible ways of correction and/or prevention.
3) providing students with knowledge about the mechanisms of teratogenic action of infectious agents, drugs and toxic substances during different stages of prenatal development.

Expected results

As a result of the discipline completion students should

know:

- The characteristics of the main stages of human prenatal development;
- Types of disruption which may occur during different stages of progenesis and embryogenesis; the methods of their prevention;
- The mechanisms of action of teratogenic, embryotoxic and fetotoxic internal and external factors ;
- Long-term outcomes of the impact of internal and external factors on the human during prenatal development.

be able to:

- Detect the characteristic structures of embryo / fetus at different stages of prenatal development;
- Model toxic impact of physical and chemical agents on germ cells, embryo and fetus in experiment;
- Analyze cause-and-effect relationships between the action of internal and external factors on the embryo/fetus during pregnancy and some diseases in the postnatal period.

COURSE DESCRIPTION

Forms and methods of study

The course is taught in the form of seminar classes (30 hours), as well as through the organization of independent work of students (60 hours);
total - 90 hours (3 credits).
The study of the discipline is implemented on the basis of the following teaching methods:

- according to the dominant tools of education: verbal, visual (presentations, video lectures, tables);
- blitz survey;
- performance of written tasks;
- situational tasks ("case method");

control skills.

- the "brainstorming" teaching method, which encourages the listeners to express their creative approach and find alternative methods of solving the proposed tasks through free expression of thoughts.

Content of the educational discipline

Names of content modules and topics

1. Embryology as a science. Meaning for medicine. Progenesis. Features of the development of male germ cells.
2. Progenesis. Features of the development of female germ cells.
3. Basic concepts of embryology.
4. Comparative embryology of chordates, development of the lancet.
5. Features of the development of amphibians, fish and birds.
6. Features of the development of mammals.
7. Development of the human embryo-1. (Ovulation, fertilization, cleavage, blastulation)
8. Development of the human embryo -2. (Gastrulation, implantation)

9. Human extra-embryonic organs (Yolk sac, allantois, amnion, chorion.)
10. Formation of placenta and umbilical cord.
11. Differentiation of embryonic leaves of a human embryo. Sources of tissue and organ development.
12. Critical periods of human development.
13. Anomalies of human development.
14. Importance of embryology for practical medicine.
15. Control of theoretical knowledge. Credit class. Final control of mastering the discipline.

List of recommended literature:

a) main:

1. Medychna embriolohiia za Lanhmanom [pereklad 8 amerykanskoho vydannia z anhl.] / Sadler T.V. – Lviv: Nautilus, 2001. – 550 s.
2. Medychna embriolohiia z osnovamy teratolohii / Silkina Yu; za red. prof. Yu. Chaikovskoho . – Vinnytsia: Nova knyha, 2011 – 208 s.

b) additional:

1. CurrentResearchinEmbryology / editedbyS.Globig. – Florida: Apple AcademicPress, 2011 – 324 p.
2. TextbookofClinicalEmbryology / editedbyK.Coward, D. Wells. – New York: CambridgeUniversityPress, 2013 – 402 p.

c) informational resources

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

ASSESSMENT

Regular knowledge control is carried out at seminar classes in accordance with the formulated tasks for each topic. When evaluating educational activity, preference is given to standardized methods of control: oral survey, structured written works, situational tasks, tests and reports.

Assessment is performed using a traditional 4-point scale. At the end of the course, the student's regular performance rate is calculated as the average score, i.e. the arithmetic mean of all grades received by the student during practical classes.

Grades interpretation:

"excellent" grade: the student shows creative abilities, knows how to acquire knowledge independently, without the help of a teacher finds and processes the necessary information, knows how to use the acquired knowledge and skills for solving problems, is able to propose innovative problem solutions, convincingly backs-up the answers, independently expresses his own thoughts and opinions.

"good" grade: the graduate student is fluent in the studied material, applies it in practice, solves exercises and problems freely in standard situations, independently corrects occasional mistakes.

"satisfactory" grade: the graduate student is able to master a substantial part of the theoretical material, but mainly in a reproductive form, demonstrates knowledge and understanding of the main statements, with the help of the teacher can

analyze educational material, correct mistakes, among which there are significant ones.

"unsatisfactory" grade: the student has mastered only the individual fragments of material that make up a small part of the whole educational material.

Only those students who do not have academic debt and whose average score for the regular knowledge control is not less than 3.00 are eligible for the assessment.

Forms and methods of the final control

The study of the educational discipline is completed with credit. The credit is gained by students who did not miss seminar classes or have worked off auditorial classes and whose average score is not less than 3.00.

The average score for the discipline is converted into a traditional 4-point scale and is calculated as the ratio of this arithmetic average to the percentage of assimilation of the required amount of knowledge in the given subject.

Average score for the discipline	The ratio of the average score received by the student for the discipline to the maximum possible value of this indicator	Grade for the discipline according to 4-point scale (traditional grade)
4,45 – 5,0	90-100%	5
3,75 – 4,44	75-89%	4
3,0 – 3,74	60-74%	3

Individual work

Assessment of the individual work of students and applicants, when studying a selective academic discipline is provided by methodical developments, visual teaching aids (video lectures, presentations), informational resources of the department, the subject of independent works, structured algorithms of skills control.

COURSE POLICY

Policy regarding deadlines and reattempts

All given tasks must be completed in accordance with deadlines. If student doesn't meet the deadline, he will receive unsatisfactory grade. If PhD student misses class because of any reason, the work-off takes place at the time established by the lecturer according to the 'Regulations on the organization of the educational process at ONMedU" (link to the regulations on the university's website https://onmedu.edu.ua/wp-content/uploads/2020/01/osvitnij-proces.pdf). The work-off is carried out in accordance with the approved schedule.

Academic Integrity Policy

The policy of the educational component is based on the principles of the academic integrity (link to the regulations on the university's website

https://onmedu.edu.ua/wp-content/uploads/2020/07/polozhennja-pro-dobrochesnist.pdf) and is determined by the system of requirements that the teacher presents to the applicant when studying the educational component:

- independent performance of educational tasks, tasks of the regular and

final control of learning results (for persons with special educational needs, this requirement is applied taking into account theirs individual needs and capabilities);

- links to sources of information in the case of using ideas, developments, statements, information.

Attendance and Tardiness Policy

Attendance and involvement during classes are required to obtain a satisfactory grade (lectures and seminar classes).

A graduate student is allowed to be late for no more than 10 minutes.

Mobile devices

The use of mobile devices is allowed in class with permission of the lecturer.

Behavior in the auditorium

The following values should be encouraged in the auditorium:

respect for colleagues; tolerance for others; receptivity and impartiality; argumentation of agreement or disagreement with the opinion of other participants in the discussion, as well as one's own opinion; respecting the dignity of the opponent's personality during communication; compliance with the ethics of academic relationships.

Head of the Department Varvara SITNIKOVA