Course Description

This course provides students with lectures and comprehensive overview of the early stages of human development and genetics, including major events of the embryonic period, the current understanding of the molecular events that guide development, beginning with the formation of gametes and ending with the formation of 3D body plan.

Credit: 1 semester credits
Repeatable: No

Course Structure

The course includes 16 lectures, 2 quizzes and 2 unified exams.

Objectives: Particular consideration will be given to the chromosome anatomy, human karyotypes, gametogenesis and chromosomal errors, gene mutations, fertilization, cleavage, gastrulation, formation of the tube-within-a-tube body plan. Special emphasis will be made on the developmental abnormalities and ways of their prevention, diagnostics, human assisted reproductive technology, prenatal genetic screening and clinical applications of these knowledge.

By the end of the course, students should be able to:

- understand the scientific basis of embryology and genetics;
- understand and explain the major events of the embryonic period;
- understand and explain the chromosome anatomy and mechanisms of inheritance;
- understand the mechanisms of chromosomal errors and gene mutations;
- understand a 3-dimensional structure of an embryo and fetus;
- recognize common abnormalities;
- apply the knowledge for interpretation of symptoms and signs of common congenital and developmental anomalies;
- communicate information about human development using language appropriate to professional colleagues and to the lay person;
- accurately advise patients on many issues in future, such as (reproduction, birth defects, prenatal development, prenatal genetic screening, in vitro fertilization, stem cells, and cloning).

Students have to pursue independent, self-directed and critical learning.

Schedule: To be posted at the beginning of the term on the online calendar.

Assignments: online Kaplan lectures.

Textbooks and Reference Materials:
Thomas W. Sadler PhD.
Walter Kumels
ISBN-10: 1451191642

Nussbaum, R.L., McInnes, R.R., and Huntington, F.W.: Thompson & Thompson – Genetics in Medicine, latest edition (8th), WB Saunders Company
ISBN-10: 1416030808

Complementary readings:
Larsen’s Human Embryology, 4th edition
ISBN-10: 0443068119

The Developing Human: Clinically Oriented Embryology 10th edition
Keith L. Moore, T.V.N. Persaud, Mark G. Torchia, Elsevier.
ISBN-10: 1437720021

ISBN-10: 0323053734

ISBN-10: 0702040436

Evaluation: Two quizzes and two unified exams will be given during the term. Quizzes I and II will be conducted before the unified exam I and II respectively. The unified exams will be taken on Friday in week # 5, and # 10. Each exam will include the entire topics covered in each block.

Quizzes and exams will use a USMLE (multiple choice) format. The time allocated for completing an exam provide approximately one minute per questions. Exams will be revised in full after examination.

The value of each question is the same for both the quizzes and exams. The final grade is expressed as the percentage of the correct answers to the questions in all the quizzes and exams.
Grade:

<table>
<thead>
<tr>
<th>Percent of Points</th>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>95-100%</td>
<td>A+</td>
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<tr>
<td>90-94%</td>
<td>A</td>
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<tr>
<td>85-89%</td>
<td>B+</td>
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<tr>
<td>80-84%</td>
<td>B</td>
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<td>75-79%</td>
<td>C+</td>
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<tr>
<td>&lt;70%</td>
<td>F</td>
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Attendance: in accordance with the Student Handbook.

Policies: The Course Syllabus may be modified at the discretion of the Course director to accommodate the changes that normally take place throughout the semester. Students will be notified each time a change to the Course Syllabus is required. Some topics may be assigned as independent study. Students will be notified when a topic is assigned as independent study.

Faculty:

Dr. Iuliia Zhuravlova, MD, PhD - Course director:
Dr. Manish Mishra, MD, PhD.