SYLLABUS

1. Course title:

BIOLOGY AND HUMAN GENETICS

2. Code:

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

NONE

7. Class restrictions:

students of Faculty of pharmacy

8. Duration / semester:

1 1

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 1

9.3. Laboratory/Practice classes: 2

10. Faculty:

FACULTY OF PHARMACY

11. Department/study program:

Pharmacy (integrated I and II cycles)

12. Lecturer:

PhD Vesna Hadžiavdić, associate professor

13. Lecturer's e-mail:

vesna.hadziavdic@untz.ba

14. Web site:

www. untz.ba

15. Course aims:

Acquiring the basic knowledge in the field of molecular biology and cell genetics. Getting familiar with basic principles of inheritance in human and molecular genetics, analysis of human genome, inherited disorders caused by chromosomal and gene mutations. Also, getting familiar with basic imunogenetics, genetics of tumors, pharmacogenetics and genetic engineering.

16. Learning outcomes:

Understanding the molecular base of cell structure and function. Getting familiar with different research methods in molecular biology and genetics. Getting students familiar with genetic material and processes of cell inheritance. Also, getting to know basic processes and terms in the field of genetic engineering and biotechnology.

17. Course content:

Eukaryotic cell. The difference between Prokaryotic and Eukaryotic cell. The difference between plant and animal cell. Physical characteristics of protoplasm and chemical composition of the cell. Nucleic acids. DNA and types of DNA. RNA, tRNA, mRNA, and rRNA. Cell membrane. Cell membrane organization. Mechanisms of transport through plasma membrane. Glycocalix. Cellular signaling. The structure of the cytoplasm. Cytosol. Specific components of cytosol. Cytoskeleton. The cell nucleus. Nuclear lamina. Nuclear matrix. rRNA genes. Cytoplasmic organelles. DNA replication. DNA reparation. Recombinant DNA. Cloning. Biosynthesis of proteins. Transcription. Post-transcriptional modification of mRNA. Translation. Protein synthesis based on transcription and translation. Genes. Mutations. Chromosomal aberrations. Mitosis. Meiosis. Gametogenesis. Apoptosis. Embryogenesis. Embryonic stage. Immunogenetics. Antigens and antibodies. The genetics of cancer. Cancerogenesis. Oncogenes and tumor suppressor genes. Pharmacogenetics. Gene therapy.

18. Learning methods:

Preferred learning methods are:
Visual, audible, verbal, kinesthetic, logical, mathematical, interactive, and individual. Most preferred learning methods are: multimedia aided lecture, being active in class discussions, laboratory exercise, as well as group and individual projects (seminars).

19. Assessment methods:

Grading scale is going to be based on two tests (test 1, test 2), colloquium, final exam, and participation in class.
Test 1 (in written form) will be given five weeks from the beginning of the course and it will include all the subjects covered in that time period. Test 1 will consist of multiple choice questions, short answers or essay questions. Maximum number of points that student can get on test 1 is 15. Test 2 (in written form) will be given ten weeks from the beginning of the course and it will include all the subjects covered after test 1. Test 2 will consist of multiple choice questions, short answers or essay questions. Maximum number of points that student can get on test 2 is 15. Both tests are given to all students at the same time. Individual projects, in a form of seminar, are handed in (in a written form) to the professor for evaluation and grading, after which it is presented in a form of an oral presentation by the student. Number of points that student can get for a seminar is from 0 to 5. Last week of classes students will be given colloquium, which will be cumulative, from the beginning of the semester, and it will cover all the subjects discussed in laboratory exercises. Maximum number of points for colloquium is 10. For class participation and discussion as well as for well performed laboratory exercises throughout the whole semester student can be awarded with points that can range from 0 to 5. Final exam is given at the end of the semester. It is a written cumulative exam from the beginning of the semester. Maximum number of points that student will need in order to pass the course is 54 (cumulative). If the student doesn’t have this amount of points (it is a sum of all points from the test 1, test 2, colloquium, and final exam) than the student is given a make-up exam.

20. Assessment components:

The final exam grade is based on a cumulative number of points that student earned through out the course. Maximum number of points for this course is 100 and it is based on following scale: Attendance at the lectures and laboratory exercises 5 points,Test 1 and 2 30 points, colloquium 10 points, seminar 5 points, final exam 50 points.

21. Required reading list:

1. Geoffrey M. Cooper i sar (2004): Stanica. Medicinska naklada, Zagreb
2. Jasminka H.H. i sar (2012): Citologija. Grin, Gračanica
3. Rifet Terzić i sar (2005): Biologija sa humanom genetikom, Medicinski fakultet u Sarajevu

22. Web sources:

genomska baza podataka: http:// wehih.wehi.edu.au;
http.//www. ebi.ac.uk;
htpp.// www.ncbi.nlm.nih.gov

23. Applicable starting from the academic year:

2012/2013

24. Adopted in the Faculty/Academy session: