Pharmaceutical Biotechnology

PHG 424

Dr. Raha Orfali

I-Course Description

PHG-424 course provides broad coverage of topics including molecular biology, bioinformatics and genomics. The course incorporates balanced coverage of basic molecular biology with practical and contemporary applications of biotechnology to provide students with the tools and knowledge they need in order to understand the field.

II-Course Content

topic	detail	lectures
I-Biotechnology overview	1. Definitions of biotechnology 2. Ancient, classic, and modern biotechnology 3. Human, environmental, and agricultural applications of biotechnology 4. Biotechnology timeline	1 1
II-DNA biology and chemistry	5. Cellular organelles 6. Cell cycle 7. Gene and chromosome structure 8. Nucleotides and DNA structure 9. DNA replication 10. Protein Synthesis 11. Genetic code and DNA mutation	1 1 1 1 2 2
III-Recombinant DNA technology	12. Definition 13. Vectors, insert, restriction and ligase enzymes 14. Transformation techniques 15. Host cells 16. Cloning 17. Pharmaceutical Bioprocessing 18. Recombinant DNA and bioprotein purification 19. PCR, electrophoresis, and DNA sequencing 20. Applications	3 1 1 1 1 3 1

III-Course Requirements

The course is fourteen weeks long that are divided between two pharmacy departments:

-The first part will handle the Pharmacognosy Department. Different topics will be covered including, Biotechnology overview, DNA Biology and Chemistry, and Recombinant DNA Technology.

-The second part will take place under the Pharmaceutical Department including different applications of biotechnology such as protein, vaccines, monoclonal antibodies etc...

A. GRADE will be assessed on the following tasks:

Major Exam 1	30%
Major Exam 2	30%
Final	40%

Note: Exam dates are yet to be announced.

B. Attendance:

- It is a crucial part of the learning process and will be a factor in each student`s course grade: therefore, it is expected that students will attend all class sessions and arrive on time to each class.
- A student will be marked as absent when entering class 10 minutes after the appointed class time.
- A student may be dropped from this course and denied entrance to exam if attendance is less than 75% of class sessions, as determined by the university council.

IV-LEARNING Resources

A. References:

1-Textbooks: There are many books in this field; the following books cover most of the topics:

1-Thieman, W. J., and Palladino, M. A. Introduction to Biotechnology, 3rd Edition, Person Education, U.S. 2013

2-Barnum, S. R. Biotechnology: An Introduction, 2nd Edition, Brooks Cole, 2006.

3- Madigan, M., Matinko, J., Bender, K., Buckley, D. and Stahl, D. Brock Biology of Microorganisms, 4th Edition, Person Education, U.S. 2015

2- Learning videos that are available and a great source on the topics handled within the course. (Youtube)

B. Learning Management System: KSU LMS will be used to view your grades as well as class announcements.

V-Rules of the Class


Support one another and present good manners in the class.


Make sure that you are being thoughtful of your classmates and being helpful and considerate.


Attendance is highly emphasized. Please do arrive on class time. No students will be allowed to enter past 10 minutes from class beginning.


Respect the shortness of the class and please keep quiet.


Try your best and never hesitate to ask for clarifications.

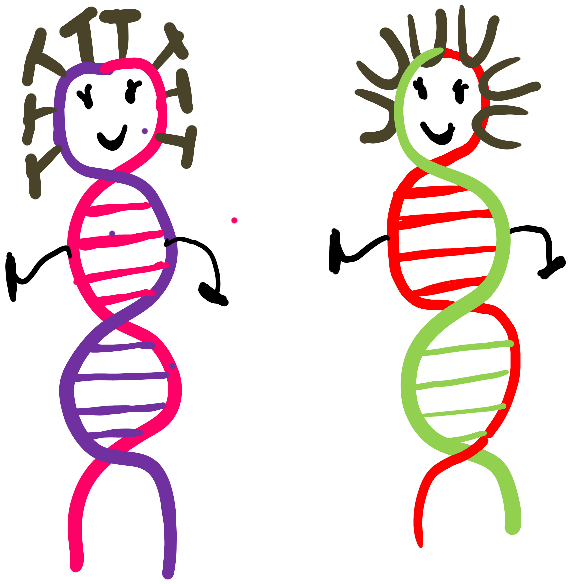
VI-Tips

-Don't be discouraged by the course material. Checking the resources mentioned above, asking for help from your professor and classmates, and following the class rules will help you in digesting the material and enjoying your time in the class.

-A task will be assigned at the end of every week by your professor.

VII-Activities

Let's have some fun with DNA & RNA:



Good Luck!

Dr. Raha Orfali

Dr. Raha Orfali