University of Jordan
Faculty of Pharmacy
Advanced Pharmaceutical Microbiology

Course no.: 1202704
Credit hours: 3

<u>**Objectives**</u>

1- The student will understand the importance of the proper use of antimicrobial agents, especially in reducing the spread of microbial resistance and complications associated with this resistance on the chemotherapy. Furthermore the student will be familiarised with the policies used to control hospital acquired infections

2- The student will be familiarized with good manufacturing practice from microbiological point of view including environmental control methods and validation of the different sterilization techniques.

3- The student will be acquainted with the production of raw materials using microorganisms by different processes with special emphasis on fermentation and genetic engineering method.

4- By the end of this course the student will be able to use the e-library and the internet to produce a report on the microorganisms and the diseases produced by them in addition to the latest updates in microbiology.

Intended Learning outcomes
A) Subject specific skills
1-The student will know the principles of proper using of the antimicrobial agents, the biochemical basis of microbial resistance and understands different policies used to control this problem
2-The student will know different methods used for microbial monitoring, validation of the environment and different pharmaceutical preparations.
3- The student will know the benefits of microorganisms in pharmaceutical industry including fermentation and genetic engineering.
B) Core academic skills
At the end of the course students are expected to gain knowledge and skills about the scientific research method of antimicrobial use policies and pharmaceutical monitoring, validation and raw material production by fermentation.
C) Personal and Key Skills
At the end of the course students are expected to have gained
1- Communication skills
2- Self-learning skills

3-Information collection skills (using e-library, internet etc….)

Learning/Teaching methods
1-lectures
2-Tutorials
3- Reports
4- Seminars
Teaching tools include transparencies, slides and data show

Assignments
Each student is assigned for a topic on which he/she explores literature and the internet and then write a report which he/she will talk about it and discuss it with his/her colleagues in the form of a seminar

Assessment
Mid Term Exam   30%
Assignments and seminars   30%
Final Exam   (40 %)

Syllabus Plan
Application of antibiotics   **(1 Hr)**
Classes of antibiotics   **(2 Hr)**
Mode of action of antibiotics   **(2 Hr)**
Misuse of antibiotics   **(2 Hr)**
Mechanisms of resistance against antibiotics   **(2Hr)**
Biofilms in nature and disease   **(2 Hr)**
Classes of biocides   **(1 Hr)**
Mode of action of biocides   **(2 Hr)**
Mechanisms of resistance against biocides   **(2 Hr)**
Spores resistance   **(2 Hr)**
Sporicidal agents   **(1 Hr)**
Impact on the society posed by microbial resistance   **(1 Hr)**
Control of resistance spread   **(2Hr)**
Hospital acquired infections   **(2 Hr)**
Control of hospital acquired infections   **(2 Hr)**
Mid term exam   **(1 Hr)**
Good manufacturing practice in the control of contamination   **(2 Hr)**
The design of controlled environment   **(3 Hr)**
Monitoring microbiological quality: conventional testing methods   **(3Hr)**
Monitoring microbiological quality: rapid microbiological methods   **(3 Hr)**
Assurance of sterility by validation of the sterilisation process   **(2 Hr)**
Application of microorganisms in pharmacy   **(2 Hr)**
Fermentation   **(2 Hr)**
Genetic engineering   **(2 Hr)**
Seminars   **(3 Hr)**

Final exam   **(2 Hr)**

Indicative Basic Reading list

Guide to Microbiological control in Pharmaceuticals. 1999S.P. Denyer and R.M Baird
Microbial Quality Assurance in Pharmaceuticals, Cosmetics and toiletries. 1988 S.F. Bloomfield, R. Baird, R.E. Leak and R. Leech.
Understanding Antibacterial and resistance. A.D. Russell and I. Chopra.
Up-to-date related papers