Spring 2-1-2007

BMED 328.01: Antimicrobial Agents

David S. Freeman

University of Montana - Missoula

Follow this and additional works at: https://scholarworks.umt.edu/syllabi

Let us know how access to this document benefits you.

Recommended Citation

https://scholarworks.umt.edu/syllabi/11126

This Syllabus is brought to you for free and open access by the Course Syllabi at ScholarWorks at University of Montana. It has been accepted for inclusion in Syllabi by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.
INSTRUCTORS: David Freeman, Office - SB 308, Phone: 243-4772, E-mail: david.freeman@umontana.edu  
Office Hours: Tuesday and Thursday, 11:00 - 1:00 p.m. and Friday, 1:10 - 4:00 p.m.  
Jean Pfau, Office – SB 152C, Phone: 243-4529, E-mail: jean.pfau@umontana.edu

EXAMS AND GRADING:
First Exam: Wednesday, FEB. 14 ........ 60 points  
Second Exam: Friday, MAR. 23 ........ 80 points  
Third Exam: Friday, APRIL 27 ........ 80 points  
Final Exam: Monday, MAY 7 ........ 100 points  
10 Point Quizzes: Best 5 or 6 out of 6 scores. .... 50 or 60 points  
Total Points: 370 or 380  
A>92%  A->90%  B++>88%  B>82%  B->80%  C+>78%  C>72%  C->70%  D>65%  
1. All EXAMS are comprehensive  
2. All exams and quizzes must be taken at scheduled times  
3. Instructor must be informed BEFORE missing a scheduled exam period for GOOD REASONS  
4. Missed exam periods must be made up within 2 days  
5. Corrections to exams or quizzes must be requested within 7 days after returning

STUDENT PERFORMANCE OBJECTIVES:
1) Know the normal relevant biochemical pathways and the major biochemical mechanisms  
of action for the different classes of drugs  
2) Know the biochemical mechanisms involved in the development of resistance to different  
classes of antimicrobial agents  
3) Given a representative chemical structure or name of a drug, know its biochemical mechanisms  
of action and for development of resistance  
4) Given a representative chemical structure or name of a drug, know its major chemical,  
pharmacologic, or therapeutic categorization  
5) Given a representative chemical structure or name of a drug, know its major  
therapeutic uses and spectrum of activity  
6) Given a representative chemical structure or name of a drug, know important aspects of its  
absorption, pharmacokinetics, and metabolism  
7) Know important chemical features (i.e., polar or lipophilic properties, labile groups, etc.) that  
affect the absorption, distribution, metabolism, elimination, potency, stability, or formulation  
of a class of antimicrobial agents  
8) Given the chemical structure of an antimicrobial agent, know important chemical changes  
that will predictably alter its properties (i.e., potency, duration of action, stability, etc.)  
9) Given a representative chemical structure or name of a drug, know its most common or serious  
adverse or side effects

REQUIRED TEXT: Goodman & Gilman, "The Pharmacological Basis of Therapeutics", 11TH Edition

Reading in Text

1095-1109  I. General Considerations, Categorization, and  
Sensitivity Testing of Antimicrobial Agents

The following areas will be covered for each outline topic below:
1. General Chemical Structures and Properties of Agents  
2. Biochemical Mechanisms of Action for Agents  
3. Biochemical Mechanisms Involved in the Development of Microbial Resistance  
4. Important Aspects of Absorption, Distribution, Metabolism, and Elimination for Agents  
5. Antimicrobial Spectrum of Activity for Agents  
6. Important Adverse Effects and Drug Interactions for Agents
II. Antibacterial Agents

1111-1118  A. Sulfonamides and TRIMETHOPRIM
1119-1122  B. Quinolones, Fluoroquinolones
1122-1124  C. METHENAMINE and NITROFURANTOIN
1127-1143  D. Beta-lactam Antibiotics
    1127-1143   1. Penicillins
    1151-1152   2. Beta-lactamase inhibitors (CLAVULANIC ACID, SULBACTAM, TAZOBACTAM)
    1143-1150   3. Cephalosporins
    1150-1151   4. Carbapenems (IMIPENEM, MEROPENEM, ERTAPENEM)
    1151       5. Monobactams (AZTREONAM)
1193-1199  E. VANCOMYCIN, TEICHOPLANIN, DAPTOMYCIN, POLYMYXIN, BACITRACIN, MUPIROCIN
1155-1168, 1193  F. Aminoglycosides, SPECTINOMYCIN
1173-1179  G. Tetracyclines, Glycylcyclines (TIGECYCLINE)
1182-1187  H. Macrolides (ERYTHROMYCIN, AZITHROMYCIN, CLARITHROMYCIN)
1187-1188  I. Ketolides (TELITHROMYCIN)
1179-1182  J. CHLORAMPHENICOL
1188-1190  K. CLINDAMYCIN
1190-1191  L. Streptogramins (QUINUPRISTIN, DALFOPRISTIN)
1192-1193  M. Oxazolidinones (LINEZOLID)
1057-1060  N. METRONIDAZOLE

III. Anti-mycobacterial Agents
1203-1214  A. Drugs for Tuberculosis (ISONIAZID, RIFAMPIN, PYRAZINAMIDE, ETHAMBUTOL)
1216-1218  B. Drugs for Mycobacterium Avium Complex Infections

IV. Antifungal Agents
1225-1230  A. AMPHOTERICIN B and FLUCYTOSINE
1230-1234  B. Azole Antifungals - Imidazoles and Triazoles (KETOCONAZOLE, FLUCONAZOLE, ITRACONAZOLE, VORICONAZOLE, POSACONAZOLE)
1235  C. Echinocandins (CASPOFUNGIN, MICAFUNGIN, ANIDULAFUNGIN)
1235-1240  D. Miscellaneous and Topical Antifungal Agents (GRISEOFULVIN, TERBINAFINE, CLOTRIMAZOLE, MICONAZOLE, TOLNAFTATE, NYSTATIN, UNDECYLENIC ACID)

V. Antiviral Agents
1243-1245  A. Overview of Viral DNA and RNA Biochemical Processes
1247-1248  B. Overview of Biochemical Mechanisms of Action and Resistance Development
1246-1256  C. Non-HIV Antiviral Agents (ACYCLOVIR, VALACYCLOVIR, CIDOFOVIR, DOCOSANOL, FAMCICLOVIR, PENCICLOVIR, FOMIVIRSEN, FOSCARNET, GANCICLOVIR, VALGANCICLOVIR, TRIFLUORIDINE, VIDARABINE)
1256-1260  D. Antiinfluenza Agents (AMANTADINE, RIMANTIDINE, OSELTAMIVIR, ZANAMIVIR)
1260-1268  E. Antiretroviral Agents, Other Antiviral Agents, and New Strategies

VI. HIV Antiviral Agents
1273-1275  A. Overview of HIV Infection
1276-1280  B. History and Principles of HIV Chemotherapy
1280-1292  C. Nucleoside Reverse Transcriptase Inhibitors (ABACAVIR, DIDANOSINE, EMTRICITABINE, LAMIVUDINE, STAVUDINE, TENOFOVIR, ZALCITABINE, ZIDOVUDINE)
1292-1297  D. Nonnucleoside Reverse Transcriptase Inhibitors (DELAVIDINE, EFAVIRENZ, NEVIRAPINE)
1297-1308  E. HIV Protease Inhibitors (AMPRENAVIR, ATAZANAVIR, DARUNAVIR, FOSAMPRENAVIR, INDINAVIR, LOPINAVIR, NELFINAVIR, RITONAVIR, SAQUINAVIR, TIPRANAVIR)
1308-1310  F. Entry Inhibitors (ENFUVIRTIDE) and New Drugs in Development