

Howard University
School of Pharmacy (SOP)
Department of Clinical & Administrative Pharmacy Sciences
Course Plan

Title: Integrative Therapeutics IIB (Infectious Diseases Pharmacotherapy) – 2 Credit Hours

Course Coordinator: *Monika N. Daftary, Pharm.D.*

Sequence: Fall Semester

Year: 3rd Academic/Professional

Format: 2-Credit course

Faculty: Drs. Mims, Park & Daftary

Prerequisites: Integrative Therapeutics I

Required Textbooks/References

1. Pharmacotherapy: A Pathophysiologic Approach, 7th Edition

Editors: DiPiro, Talbert, Yee, Matzke, Wells, and Posey

Publishers: McGraw-Hill Medical

ISBN: 0071416137

2. Applied Therapeutics: The Clinical Use of Drugs, 9th Edition

Authors: Koda-Kimble, Young, Kradjan, Guglielmo, Alldredge and Corelli

Publishers: Lippincott, Williams & Wilkins, Philadelphia, PA 19106

ISBN: 078174845-3

3. Handbook of Nonprescription Drugs, 14th Edition

Authors: Berardi, DeSimone, Newton, Oszko, Popovich, Rollins, Shimp, and Tietze

Publishers: APhA Publications, Washington, DC

ISBN#: 1582120501

4. Websites

- www.aidsinfo.nih.gov (AIDS Information)
-practice guidelines, updates
- www.idsociety.org (Infectious Disease Society of America)
-practice guidelines, journals
- www.cdc.gov (Centers for Disease Control)

Recommended books or study aids:

It is also suggested that the student acquire a medical dictionary and a drug information handbook.

Supplemental reading as assigned by individual instructors and course coordinator.

Course Description

This course will be taught by the clinical and basic science faculty together to provide instruction utilizing both didactic and practical experience sessions. The course is organized by organ systems of the human body and various diseases associated with them. Students will learn about the pathophysiology and pharmacotherapy of various disease states that health care practitioners (pharmacists) may encounter in their practice settings. Students will also learn to make appropriate therapy choices, define goals of therapy, and learn to assess whether these goals are being achieved. Students will learn to create, implement and monitor pharmaceutical care plans. A goal of this course is to prepare students with the ability to render pharmaceutical care and participate successfully for the experiential program.

The course is structured in a modular format. In order for students to achieve the course goals and objectives, a number of teaching methods will be employed. Students will participate in traditional lectures, small group discussions, and practical laboratories to reinforce didactic teaching and web discussions.

Module IIB will follow Module IIA in the infectious disease topics. Module IIB will include learning characteristics of common infections affecting different organ systems. Appropriate therapy for community acquired infections and hospital acquired infections will be compared. Recent epidemiological data from Center for Disease Control and Prevention and their guidelines for treatment, preventive and the various infection control measures will be studied. This includes defining the goals of therapy, selecting appropriate therapy from among available choices, and evaluating and documenting outcomes. Students will gain experience with various patient focused care processes. Upon completion of this course, students should be prepared to participate in offering patient care for the infectious diseases and conditions covered in Module IIB.

Overall Course Objectives:

The course is intended to enable the student to:

1. To apply the knowledge of both basic and clinical sciences in the management of pharmaceutical care problems.
2. To evaluate and apply medical literature in the making of appropriate clinical decisions.
3. To further develop problem solving, group interactions, and communication (both written and verbal) skills needed to solve pharmaceutical care problems.
4. To communicate pharmacy and medical development, skills and knowledge to patients, health care professionals and the community.
5. To effectively use available resources to develop and execute pharmaceutical care plans.
6. To utilize various educational teaching methods including problem-based learning and computer technology provided in the curriculum, and apply these concepts to their educational

process.

7. In the presented disease state areas, students should be able to provide the following: 1) definition; 2) etiology; 3) epidemiology; 4) pathophysiology/pathogenesis; 5) diagnosis; 6) treatment (legend, OTC and CAM); 7) monitoring parameters for drug therapy; 8) utilize pharmacokinetic principles where appropriate; 9) discuss/utilize concepts learned from landmark studies for optimal disease state management; 10) provide individualized therapy; and 11) use pharmacoeconomic principles for providing cost-effective therapies.

Relationship to Terminal Competencies:

Upon completion of the course, the student should be able to fulfill the following terminal competencies:

1. Retrieve, evaluate, and interpret health science literature efficiently and accurately for pharmaceutical care, research, and education.
2. Independently identify and assess patient parameters relative to the effectiveness and adversities of drug therapy utilizing:
 - A. Medical history
 - B. Appropriate physical findings (and physical assessment skills)
 - C. Laboratory tests
 - D. Diagnostic tests
 - E. Therapeutic drug monitoring, serum concentration of drugs
 - F. Medication history
 - G. Cost analysis
3. Select and recommend the therapeutic and diagnostic agent(s) most appropriate to individual patient variables using acceptable therapeutic goals and end points.
4. Assess patient information and symptoms of illness in order to make appropriate referral or other recommendations.
5. Communicate effectively with health-care professionals and patients to ensure the provision of safe and effective pharmaceutical care.
6. Provide patient care consultation services utilizing a comprehensive database, in combination with knowledge inculcating pathophysiology, therapeutic principles, pharmacokinetic goals and end points.
7. Integrate sociological, behavioral, economic, and environmental aspects of patient care into professional practice.

8. Provide instruction to health professionals regarding drug therapy.

Relationship to NAPLEX Competencies (Revised)

Upon completion of the course, the student should be able to fulfill the following NAPLEX competency areas:

Area 1 Assure Safe and Effective Pharmacotherapy and Optimize Therapeutic Outcomes

1.1.0 Obtain, interpret and evaluate patient information to determine the presence of a disease or medical condition, assess the need for treatment and/or referral, and identify patient-specific factors that affect health, pharmacotherapy, and/or disease management.

1.1.1 Identify and assess patient information including medication, laboratory and disease state histories.

1.1.2 Identify and/or use instruments and techniques related to patient assessment and diagnosis.

1.1.3 Identify and define the terminology, signs, and symptoms associated with diseases and medical conditions.

1.1.4 Identify and evaluate patient factors, genetic factors, biosocial factors, and concurrent drug therapy that are relevant to the maintenance of wellness and the prevention or treatment of a disease or medical condition.

1.2.0 Identify, evaluate, and communicate to the patient or health-care provider, the appropriateness of the patient's specific pharmacotherapeutic agents, dosing regimens, dosage forms, routes of administration, and delivery systems.

1.2.1 Identify specific uses and indications for drug products.

1.2.2 Identify the known or postulated sites and mechanisms of action of pharmacotherapeutic agents.

1.2.3 Evaluate drug therapy for the presence of pharmacotherapeutic duplications and interactions with other drugs, food, diagnostic tests, and monitoring procedures.

1.2.4 Identify contraindications, warnings and precautions associated with a drug product's active and inactive ingredients.

1.2.5 Identify physiochemical properties of drug substances that affect their solubility, pharmacodynamic and pharmacokinetic properties, pharmacologic actions, and stability.

1.2.6 Interpret and apply pharmacodynamic and pharmacokinetic principles to calculate and determine appropriate drug dosing regimens.

1.3.0 Manage the drug regimen by monitoring and assessing the patient and/or patient information, collaborating with other health care professionals, and providing patient education.

- 1.3.1. Identify pharmacotherapeutic outcomes and endpoints.
- 1.3.2. Evaluate patient signs and symptoms, and the results of monitoring tests and procedures to determine the safety and effectiveness of pharmacotherapy.
- 1.3.3. Identify, describe the mechanism of, and remedy adverse reactions, allergies, side effects and iatrogenic or drug-induced illness.
- 1.3.4. Prevent, recognize, and remedy medication non-adherence, misuse or abuse.
- 1.3.5. Recommend pharmacotherapeutic alternatives.

Area 2 Assure Safe and Accurate Preparation and Dispensing of Medications

- 2.1.0 Perform calculations required to compound, dispense, and administer medication.
 - 2.1.3 Calculate the rate of drug administration
- 2.2.0 Select and dispense medications in a manner that promotes safe and effective use.
 - 2.2.1 Identify drug products by their generic, brand and/or common names.
 - 2.2.2. Determine whether a particular drug dosage strength or dosage form is commercially available, and whether it is available on a nonprescription basis.
 - 2.2.3 Identify commercially available drug products by their characteristic physical attributes.

Area 3 Provide Health Care Information and Promote Public Health

- 3.1.0 Access, evaluate and apply information to promote optimal health care.
 - 3.1.2 Evaluate the suitability, accuracy, and reliability of information from reference sources by explaining and evaluating the adequacy of experimental design and by applying and evaluating statistical tests and parameters.
- 3.2.0 Educate the public and health-care professionals regarding medical conditions, wellness, and dietary supplements, and medical devices.
 - 3.2.1 Provide health care information regarding the prevention and treatment of diseases medical conditions, including emergency patient care.
 - 3.2.4 Provide information regarding the selection, use and care of medical/surgical appliances and devices, self-care products, and durable medical equipment, as medical conditions.

Learning Topics:

Module IIB:

1. Review of antibacterials, antifungals, antihelminthic, antivirals, antiretrovirals including clinical indications, dosage regimen, drug interactions, adverse effects, pharmacoeconomic issues.
2. Learn to optimize therapy by properly utilizing patient specific infectious diseases parameters
3. Drugs discussed: - Antibacterials, antifungals, antihelminthic, antivirals, antiretrovirals antiprotozoals

Module IIB Content:

Infections by organ system:

Lung: Tuberculosis, Upper and lower respiratory tract infections

CNS: Meningitis

Genitourinary: Urinary tract infections, Sexually transmitted diseases

Gastrointestinal: Abdominal infection, infectious diarrhea

Skin and tissue: Cellulitis, Necrotizing fasciitis
Surgical prophylaxis, surgical site infections

Blood/Heart: Bacteremia, Endocarditis

Infections affecting multiple organ systems

HIV/AIDS, Parasitic infections, Systemic fungal infections, Systemic viral infections

An extensive calendar format of topics to be covered is provided below.

The final outcome of this module should enable students to be able to identify and synthesize the information needed to design, monitor, and evaluate infectious diseases pharmacotherapy for specific infectious diseases listed in this course schedule.

The learning steps for appropriate anti-infective regimen for specific diseases include;

Step 1. Build information base needed to design; Step 2. Design the regimen, and Step 3. Design monitoring plans:

1. Identify the types of information the pharmacist requires to prevent, detect, and resolve antiinfective-related problems and to make appropriate drug therapy recommendations.
2. Explain signs and symptoms, epidemiology, risk factors, pathogenesis, natural history of disease, pathophysiology, clinical course, etiology, and treatment of the majority of those infectious diseases listed in the course schedule.
3. Explain the mechanism of action, mechanism of resistance, pharmacokinetics, pharmacodynamics, pharmacoeconomics, usual regimen (dose, schedule, dosage form, route, duration and method of administration), indications, contraindications, interactions, adverse reactions and therapeutics of anti-infectives.
4. Accurately interpret microbiological data (e.g., cultures, serology, stains.)
5. Specify pharmacotherapeutic goals for a patient with an infectious disease that integrate patient specific data, disease-specific and medication-specific information, and ethical and quality-of life considerations.
6. Design an anti-infective regimen that meets the pharmacotherapeutic goals established for a

patient; integrates patient-specific disease and drug information, ethical, and quality-of-life issues; and considers pharmacoeconomic principles.

7. Explain concerns with microbial resistance, compliance, cost, and route of administration when

making decisions on anti-infective regimens for patients in various health-care settings.

8. Determine parameters to monitor that will measure achievement of pharmacotherapeutic goals for an anti-infective regimen.

9. State customary monitoring parameters for anti-infective regimens and the therapeutic responses

for the diseases listed in course schedule.

10. State customary parameters used to monitor adverse effects of anti-infective therapy.

11. Define a desirable value range for each selected parameter taking into account patient-specific information.

12. Explain the use of treatment guidelines and/or critical pathways in the design of anti-infective regimen and monitoring plans.

**Adapted from ASHP Infectious Diseases pharmacy learning objectives*

Instructional/Methodology/Activities

The course is comprised of a lecture series which are intended to enable the application of knowledge acquired. Lecture styles may vary and students are expected to adapt to the manner of presentation. Students are advised to discuss any difficulties in following a particular lecture with the responsible faculty lecturer. It is assumed that the student is familiar with normal anatomic constructions, physiologic processes, biological and cellular chemistry. It is assumed that this knowledge had been acquired in the student's foundation courses in the basic sciences and/or all prerequisite courses.

Course Instructors: This course will be team-taught and some lecturers come from area institutions and practices. Students are expected to function in a professional manner for all classroom sessions.

Reading Assignments: Students are expected to review assigned reading materials and supplemental articles provided by the instructor prior to the start of the scheduled lecture or series.

Class Participation: Students are expected to participate in all activities and are held responsible, even when absent.

Assessments are comprised of written assessments, and quizzes. Distribution of each grade percentage is described below

A variety of teaching methodologies will be employed. Students will participate in traditional lectures, small group discussions, and practical laboratories (in the laboratory section) to reinforce didactic teaching and web discussions.

Policies on Examinations, Grades, Class Attendance, Dress Code, and Examinations:

1. The College/University policies concerning student Conduct and Cheating during examinations described in the **SOP Student Handbook/Manual** and the Howard University By-Laws on Student Code of Conduct and Judiciaries described in the **H-Book** shall apply to this course. In addition, **only** nonprogrammable calculators shall be allowed in the exams. A student who violates this policy will receive a grade of “zero” on that exam.
2. All scheduled exams shall be based on materials covered since the last exam as described in the Lectures/Exams Schedule and shall be announced before each examination. The final examination shall be comprehensive, i.e., it shall cover all the material of the course.
3. The exam schedule appears in the Lectures/Exams Schedule as outlined. However, the class, through its President, may request changing any or all of the scheduled examinations because of conflict with other courses **only within the first ten (10) working days** of the semester. The Course Coordinator shall attempt to accommodate this request while taking into account the need to include in each examination a reasonable amount of course material. After distributing the final revision, no change in the examination schedule shall be permitted except under unforeseen circumstances determined by the Course Coordinator.
4. Students have the responsibility to take all scheduled examinations on the announced date and time. To insure fairness in the conduct of examinations, no tardy student shall be allowed into the examination room after any other student has left the room. A student who reports to the examination hall late shall not be given any extra time.
5. A student who fails to appear and take the exam on its scheduled date and time, shall earn the grade of "zero" unless his/her absence is considered “excused” or as a result of a departmental decision as described in item 6 or 7 of these policies.¹
6. An absence from an examination shall be considered "excused" in which the student is allowed to take a makeup exam, if it occurs because of any one of the following circumstances:
 - (a) Hospitalization of the student due to illness or accident.
 - (b) Death in the student’s immediate family (e.g., spouse, parents, guardians, siblings and/or children).
 - (c) Summon of the student to appear for Jury Duty or before a court. In these cases, the absentee student shall submit documents supporting the above claims (Hospital Admission Form, Death Certificate or Government/ Court Subpoena) to the Course

¹ *Although calling the Instructor or the Course Coordinator on or before the exam is desirable, it does not constitute a permission to miss the exam*

Coordinator. Upon satisfactory verification, the student shall be allowed to take a makeup exam. The makeup exam may be an essay or a multiple-choice, a term paper, or any other assignment at the discretion of the Course Coordinator.

7. In cases other than those listed in item 6, the absentee student shall submit a written petition to the Course Coordinator explaining the circumstances of missing the exam and shall attach documents (Student's Health Form is not sufficient for this purpose) supporting his/her claim. The Course Coordinator shall submit the petition and documents to the Department of Clinical & Administrative Pharmacy Sciences which shall hold a "hearing" in the student's presence. The Department shall take one of the following actions

(a) ***Consider the absence as "excused" and allow the student to take a makeup exam without any stipulation.*** In this case, the student shall earn the score he/she received on the exam. The makeup exam may be an essay or multiple-choice, a term paper, or any other assignment at the discretion of the Course Coordinator.

(b) ***Consider the absence as "unexcused". In this case, the student shall be given a "zero" in this exam***

8. Students may review and compare their answers with the exam key during the specific times announced by the instructor and requests for grade changes will be considered only during this time.

9. **American Disability Act Statement:** Howard University is committed to providing an educational environment that is accessible to all students. In accordance with this policy, students in need of accommodations due to a disability should contact the Office of the Dean for Special Student Services for verification and determination of reasonable accommodations as soon as possible after admission to the University, or at the beginning of each semester. The Dean of Special Student Services, Dr. Barbara Williams, can be reached at (202) 238 – 2420.

10. **Reading Assignments:** Students are expected to review assigned materials and articles provided by the instructor and textbook assignments as noted prior to the start of the scheduled class.

12. **Class Participation:** Students are expected to participate in all activities. Students are also expected to read the appropriate materials prior to coming to class.

13. **Course Instructors:** This course is team-taught and many of our lecturers are guests to the SOP. You are expected to behave in a professional manner in all class sessions. Please note although course coordinator will proctor all assessments specific content questions should be directed to the instructor who taught the materials.

14. **Class Attendance:** All students are expected to attend classes regularly and promptly. Students who abstain from attending classes are held responsible for the course materials. No food or drinks shall be allowed in class during the lectures/conferences.

15. Dress Code: The school policy concerning Dress Code as described in the SOP Student Handbook/Manual shall apply to this course

16. Non-registered Students

A non-registered student is not authorized or permitted to continue in Integrated Therapeutics IIB past the final day for registration. No exceptions are permitted. No one will be allowed to remain in the class or participate in any class activity. If you have registered for the course and paid your fees but your name is not on the class roll, you may show the instructor an official University paid receipt for the course to remain temporarily in class while you follow University procedure to be placed on the University Official class roster as quickly as possible. Registration printout is not acceptable.

Grading & Assessment Policies

Integrated Therapeutics II consists of hour modules; however, this is the syllabus for Module IIB Infectious Diseases Pharmacotherapy. Each module will have a separate grade assigned to it, and is considered a separate course.

A detailed explanation of the points assigned to the module is provided below.

Module IIB Infectious Diseases Pharmacotherapy

Assessment	Points
1 Examination	100
2 Quizzes	100
Final Examination	100
Total	300

The numerical equivalent of letter grades and point values is as follows:

Score	Letter Grade
90-100	A
86-89	B+
80-85	B
76-79	C+
70-75	C
<70	F

The score of each examination shall be rounded off to an integer according to accepted methods of rounding off.

Policy regarding course withdrawal:

The deadline for course withdrawal is five business days prior to the scheduled final exam posted at the beginning of the course.

Policy regarding Remediation:

Each course coordinator will determine the remediation method to be used in the course and provide details directly to the students. No remediation will be given after the final exam of the course.

Tutors for group sessions may be available through the Center of Excellence (COE). The course coordinator is available to review exams with students during office hours and/or by appointment.

Course Evaluation:

Each student will be provided an opportunity to evaluate the course anonymously as noted in the course schedule. This evaluation is provided by the School of Pharmacy.

Lecture/Examination Schedule: *Integrated Therapeutics IIB*

Fall 2009 *Revised 9/4/2009*

Classroom: MED- 3210

Course Coordinator: Dr. Monika N. Daftary

Class Schedule:

Classes: M, T, W, Th, F (see details below)

Mondays: 2:30 – 4:30 PM

Tuesdays, Wednesdays*, Thursdays and Fridays: 2:30 – 5:00 PM

Note: Wednesdays are reserved for self-study and if needed, for remediation, exams, tutor sessions, etc. Remediation will entail exercises, assessment or any activity the course coordinator assigns.

Infectious Diseases Pharmacotherapy (IT II B) Module Dates 9/24/09 – 10/23/09	
Week 1	
Wednesday <i>September 23, 2009</i> 2:30 PM – 5 PM Module A Final Examination Dr. Park	
Thursday* <i>IT2B Starts</i> <i>September 24, 2009</i> 2:30 – 5:00 PM <u>Topic:</u> Sexually Transmitted Diseases <u>Lecturer:</u> Dr. Daftary <u>Assignments</u> Reading: per instructor	
Friday <i>September 25, 2009</i> 2:30 – 5:00 PM <u>Topic:</u> Central Nervous System Infections <u>Lecturer:</u> Dr. Daftary <u>Assignments</u> Reading: per instructor	
Week 2	

Monday

September 28, 2009

2:30 PM – 4:30 PM

Topic: Lower Respiratory Tract Infections

Lecturer: Dr. Park

Assignments

Reading: Per instructor

Tuesday

September 29, 2009

2:30 PM – 5 PM

Topic: Surgical Prophylaxis and Surgical Infections

Lecturer: Dr. Park

Assignment:

Reading: Per instructor

Wednesday

September 30, 2009

2:30 PM – 5 PM

Topic: Review/Remediation (will be announced in class)

Lecturer: Dr. Daftary

Thursday

October 1, 2009

2:30 PM – 5 PM

Quiz I 2:30 – 3 PM - Dr. Daftary

3:00 PM – 5:00 PM

Topic: Urinary Tract Infections

Lecturer: Dr. Daftary

Assignment:

Reading: Per instructor

Friday

October 2, 2009

2:30 PM – 5 PM

Topic: Skin and Soft Tissue Infections

Lecturer: Dr. Daftary

Assignment:

Reading: Per instructor

Week 3**Monday**

October 5, 2009

2:30 PM – 5 PM*

Topic: Tuberculosis

Lecturer: Dr. Daftary

Assignment: Reading: Per instructor

Tuesday

October 6, 2009

No Class – Study Period

Wednesday

October 7, 2009

2:30 PM – 5 PM

Examination I

Thursday

October 8, 2009

2:30 PM – 5 PM

Topic: Endocarditis

Lecturer: Dr. Mims

Assignment:

Reading: per instructor

Friday

October 9, 2009

2:30 PM – 5 PM

Topic: Viral Infections I – non-HIV

Lecturer: Dr. Daftary

Assignment:

Reading: Per instructor

Week 4

Monday

October 12, 2009

No Class – Holiday, Columbus Day

Tuesday

October 13, 2009

2:30 PM – 5:00 PM

Topic: Fungal Infections I

Lecturer: Dr. Daftary

Assignment:

Reading: Per Instructor

Wednesday

October 14, 2009

2:30 PM – 5 PM

Topic: Review/Remediation (will be announced in class)

Lecturer: Dr. Daftary

Thursday

October 15, 2009

2:30 PM – 5 PM

Topic: Fungal Infections II & HIV I

Lecturer: Dr. Daftary

Assignment:

Reading: Per Instructor

Friday

October 16, 2009

2:30 – 3 PM Quiz II – Dr. Daftary

3:00 PM – 5 PM

Topic: HIV II

Lecturer: Dr. Daftary

Assignment:

Reading: Per instructor

Week 5

Monday

October 19, 2009

2:30 PM – 4:30 PM

Topic: Opportunistic Infections

Lecturer: Dr. Daftary

Assignment:

Reading: Per Instructor

Tuesday

October 20, 2009

2:30 PM – 5 PM

Topic: Parasitic Infections I

Lecturer: Dr. Daftary

Assignment:

Reading: Per Instructor

Wednesday

October 21, 2009

2:30 PM – 5 PM

Topic: Parasitic Infections II & Review

Lecturer: Dr. Daftary

Assignment:

Reading: Per Instructor

Thursday

October 22, 2009

No Class – Study Period

Friday

October 23, 2009

2:30 PM – 5 PM

Final Examination