Phar 6758 Pulmonary Pharmacotherapy

Course Syllabus Spring 2015
1.1 Credits

This course adheres to the items listed in the College of Pharmacy Central Syllabus:
https://docs.google.com/a/umn.edu/document/d/1artQ5e1rbzxe8IEtWo7BE8k8snZAEgMMz_QcW8yJ-Il/edit?pli=1

Meeting Times & Locations

<table>
<thead>
<tr>
<th>Dates</th>
<th>Day</th>
<th>Time</th>
<th>Duluth Room</th>
<th>Twin Cities Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 6-9</td>
<td>Monday</td>
<td>8:00-9:55 am</td>
<td>163 LSci</td>
<td>Moos 1-450</td>
</tr>
<tr>
<td></td>
<td>Wednesday</td>
<td>2:30-4:25 pm (April 15 and 22 will be 8:00-9:55 am)</td>
<td>Lib 410</td>
<td>WDH 7-135</td>
</tr>
<tr>
<td></td>
<td>Thursday</td>
<td>10:10 am-12:05 pm</td>
<td>163 LSci</td>
<td>Moos 1-450</td>
</tr>
<tr>
<td>April 13-23</td>
<td>Monday</td>
<td>8:00-9:55 am</td>
<td>163 LSci</td>
<td>Moos 1-450</td>
</tr>
<tr>
<td></td>
<td>Wednesday</td>
<td>8:00-9:55 am (yes, this is correct)</td>
<td>Lib 410</td>
<td>WDH -135</td>
</tr>
<tr>
<td></td>
<td>Thursday</td>
<td>10:10-12:05</td>
<td>163 LSci</td>
<td>Moos 1-450</td>
</tr>
<tr>
<td>April 27-May 7</td>
<td>Monday</td>
<td>8:00-9:55 am</td>
<td>163 LSci</td>
<td>Moos 1-450</td>
</tr>
<tr>
<td></td>
<td>Wednesday</td>
<td>2:30-4:25 pm</td>
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<td>10:10 am-12:05 pm</td>
<td>163 LSci</td>
<td>Moos 1-450</td>
</tr>
</tbody>
</table>

Course Website: https://moodle.umn.edu

Instructional Team

If you need assistance with the course, contact one of the Teaching Assistants.

Technology Help, Duluth: 218-726-8847 itsshelp@d.umn.edu
Technology Help, Twin Cities: 612-301-4357 help@umn.edu

Faculty Office Hours: by appointment

Course Directors
Don Uden, PharmD
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Course Instructors:
Jean Moon, PharmD
7-103 Weaver-Densford Hall
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Megan Undeberg, PharmD, BCACP
107 Life Science
218-726-6039
undeberg@d.umn.edu
Preferred method of contact: email or after class

Laura Palombi, PharmD, MAT, AE-C
117 Life Science
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lpalombi@d.umn.edu
Preferred method of contact: email

Teaching Assistants:
TBD
Course content:
The course is designed to provide students with the requisite pathophysiology and pharmacotherapeutic knowledge to care for patients with common pulmonary diseases. It will integrate concepts of pediatric and geriatric pulmonary dosing and infectious diseases. In addition, the course will include integrated with SAPh faculty content.

Course format:
This clinical module is a highly interactive course that will center on case-based, active learning. This format will stimulate student self-learning, increase experience in working with simulated examples related to clinical situation, and help develop critical thinking skills that will improve student retention of knowledge and skills necessary to improve patient care and outcomes. Each class typically will be 2 hours in length, with didactic review and applied active learning sections. Students will be expected to spend about 2 hours (on average) out of class in preparation prior to each active learning class module (e.g. VoiceThread presentations, readings or cases from Applied Therapeutics textbook, journal article reviews). Faculty will use class lists to call on individual students and groups during the in-class learning sessions.

Most of the teaching within this course will be guided by Drs. Uden, Moon, and Undeberg, but will we also utilize acknowledged clinical experts as guest teachers for some topics.

In summary, students will be expected to spend about 6 hours a week in outside class preparation prior to active learning, lecture and case-based learning sessions. Preparation time for PCLC integrated activities is not included here.

Prerequisites

Courses
Applied Pharmaceutical Care, Foundations of Social and Administrative Pharmacy, Medicinal Chemistry and Pharmacology of Cardiovascular Agents, Pharmacokinetics and Applied Pharmacokinetics, Cardiovascular Pharmacotherapy, Molecular Metabolism and Nutrition, Foundations of Pediatrics and Geriatrics

Topics
Physiology: specifically pulmonary clearance, gas exchange (CO2/O2 exchange), IgE/protein allergen complex with mast cells, leukotrienes, PGED2, neutrophils, eosinophils, lymphocytes, and macrophages.

Biochemistry, molecular metabolism

Pharmacokinetics: Concepts: ADME, LD (concept of why LD needed, weight selection and use of intermittent and bolus equations)—for antibiotics?, MD (calculating dosing interval, use and manipulation of bolus and intermittent infusion equations (e.g. aminoglycosides) capacity limited metabolism, kidney drug clearance, how dose adjustment strategies (change dose vs change dosage interval) affects Cpmax, Cpavg, Cpmin, concept of therapeutic drug monitoring and applications with common drugs (theo; antibiotics), sampling strategies (when to draw drug concentrations for theophylline); steadystate vs nonsteady state. MICs, concentration dependent killing, time dependent killing

Pharmacology/Medicinal Agents: antihistamines, intranasal and pulmonary inhaled corticosteroids, oral corticosteroids, short-acting and long-acting beta agonists, inhaled anticholinergics
Requirements

Course Materials

Required


Computer / Technology Requirements

- Moodle: This course will use Moodle to distribute resources and host course activities. See Moodle setup requirements at http://www1.umn.edu/moodle/start/technical.html
- E-Textbooks: The Koda-Kimble Applied Therapeutics textbook will be provided as an e-text.
- Email: Course instructors will communicate through email about course administrative issues. We suggest that you check your U of M email daily.
- Clickers: You will need your TurningPoint clickers to participate in questions and cases during lectures and all active learning sessions.
- Laptop, notebook, or iPad (device) to access Internet during active learning and case sessions.

Attendance Policy

Students are expected to attend every class for which they are registered. Students are expected to attend classes on the campus where they are enrolled. Instructors may choose to take attendance.

Goals & Objectives

Learning Objectives

1. Differentiate between seasonal and perennial allergic rhinitis (AR), identify and modify AR triggers, select appropriate nonpharmacologic and pharmacologic therapy for the management of AR and develop a patient-centered evidence based best practice care plan for a simulated or actual patient.
   *Domain Competencies: 1.0, 1.1, 1.2, 1.4, 1.5, 1.7, 2.4, 6.0, 6.1, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.4.5, 6.4.6
   *Scientific Foundations: 1.2.1, 1.2.2, 2.1.1, 2.1.2, 2.1.6, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 5.2.2, 5.8.1, 5.8.2, 5.8.3, 5.8.5, 5.8.10, 5.8.12

2. Assess, interpret, apply national guidelines, and develop a patient-centered evidence based best practice care plan for a simulated or actual patient with asthma.
   *Domain Competencies: 1.0, 1.1, 1.2, 1.4, 1.5, 1.7, 2.4, 3.1, 3.6, 6.0, 6.1, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.4.5, 6.4.6
   *Scientific Foundations: 5.1.3, 5.1.4, 5.1.5, 5.2.3, 5.3.10, 5.13.4, 5.4.1

3. Assess, interpret, apply national guidelines, and develop a patient-centered evidence based best practice care plan for a simulated or actual patient with COPD.
   *Domain Competencies: 1.0, 1.1, 1.2, 1.4, 1.5, 1.7, 2.4, 6.0, 6.1, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.4.5, 6.4.6
   *Scientific Foundations: 5.2.2, 5.3.14, 5.4.1, 5.6.1, 5.8.2, 5.7.5

4. Identify the pathogenesis and pharmacotherapy of common upper respiratory tract infections (otitis media and sinusitis) and community acquired pneumonia; apply national guidelines for otitis media and develop a patient-centered evidence based best practice care plan for a simulated or actual patient.
   *Domain Competencies: 1.0, 1.1, 1.2, 1.4, 1.5, 1.7, 2.4, 6.0, 6.1, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.4.5, 6.4.6

Assessments and Grading

Assignments and learning activities

Weekly quizzes will be administered via Moodle at the beginning of class and available for 10 minutes.
Graded Assessments

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Points</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-assessment: Quiz on physiology of lung function</td>
<td>25</td>
<td>11%</td>
</tr>
<tr>
<td>15 quizzes</td>
<td>10 points each</td>
<td>4% each</td>
</tr>
<tr>
<td></td>
<td>150 points total</td>
<td>67% total</td>
</tr>
<tr>
<td>Comprehensive Online Final Exam</td>
<td>50</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td></td>
</tr>
</tbody>
</table>

Course Letter Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>%</td>
<td>100-93</td>
<td>92-90</td>
<td>89-87</td>
<td>86-83</td>
<td>82-80</td>
<td>79-77</td>
<td>76-73</td>
<td>72-70</td>
<td>69-60</td>
<td>59-0</td>
</tr>
</tbody>
</table>

Statement on Penalties for Late Work
Late work will not be accepted unless it is a University approved absence.

Exam Policy
The preassessment quiz will be offered week 10 of the semester. Students will be given the opportunity to retake this exam prior to the first day of class if desired by week 13. Best score will be used for the final grade. Students who fail the first offering of the pre-assessment quiz (i.e., less than 60%) will be expected to review pertinent materials to bring their score up to the passing level on the retake. The best score will be used for the final exam even if students fail the re-take pre-assessment quiz.

The final exam will be offered during the last week of classes and will be multiple choice and online.

Minimum Passing Level
As per the Academic Standing Committee Policy, students who receive a grade below C in this course must successfully repeat the course before advancing to 2nd year courses.
## Schedule

<table>
<thead>
<tr>
<th>Week 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>April 6</strong></td>
<td><strong>Allergic Rhinitis</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td>● Applied Therapeutics, Chapter 25</td>
<td></td>
</tr>
<tr>
<td>● Read article: <a href="http://www.aacijournal.com/content/7/S1/S3">http://www.aacijournal.com/content/7/S1/S3</a></td>
<td></td>
</tr>
<tr>
<td><strong>April 8</strong></td>
<td><strong>Allergic Rhinitis</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td><strong>April 9</strong></td>
<td><strong>Allergic Rhinitis</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td>● Review patient case and drug delivery notes prior to class</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>April 13</strong></td>
<td><strong>Pathophysiology of Asthma &amp; Pulmonary Function Testing</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td>● Applied Therapeutics, Chapters 27 and 28</td>
<td></td>
</tr>
<tr>
<td><strong>April 15</strong></td>
<td><strong>Classification of Asthma</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td>● Read 2007 NHLBI Guidelines, Sections-Diagnosis of Asthma, Managing Asthma Long Term: Component 1</td>
<td></td>
</tr>
<tr>
<td>● Read 2012 GINA Guidelines, Chapters 1 and 2</td>
<td></td>
</tr>
<tr>
<td><strong>April 16</strong></td>
<td><strong>Environmental and Patient Factors of Asthma</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td>● Read 2007 NHLBI Guidelines, Sections-Components 2 and 3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>April 20</strong></td>
<td><strong>Asthma Medication – Long Term Control</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td>● Read SMART Trial</td>
<td></td>
</tr>
<tr>
<td>● Read 2007 NHLBI Guidelines, Sections-Component 4, Stepwise Approach for Managing Asthma</td>
<td></td>
</tr>
<tr>
<td>● Read 2012 GINA, Chapters 3 and 4</td>
<td></td>
</tr>
<tr>
<td><strong>April 22</strong></td>
<td><strong>Asthma Medications – Acute Exacerbations</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
</tr>
<tr>
<td>● None</td>
<td></td>
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</tbody>
</table>

*Note: Class will be 8:00-9:55 am*
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 23</td>
<td><strong>Asthma Care Plans, Self-Management, and Follow-up</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignments</td>
<td>● None</td>
</tr>
<tr>
<td>April 27</td>
<td><strong>COPD Pathophysiology and Pulmonary Function Testing</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignments</td>
<td>● Read GOLD Guidelines, Chapter 1</td>
</tr>
<tr>
<td>April 29</td>
<td><strong>COPD Classification and Management</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignments</td>
<td>● Read GOLD, Chapters 2, 4, 5, and 6</td>
</tr>
<tr>
<td>April 30</td>
<td><strong>COPD Treatment</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignments</td>
<td>● Read GOLD, Chapter 3</td>
</tr>
<tr>
<td>May 4</td>
<td><strong>ID Otitis</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignments</td>
<td>● Read The Diagnosis and Management of Acute Otitis Media. Pediatrics, 2/25/2013</td>
</tr>
<tr>
<td>May 6</td>
<td><strong>ID Sinusitis/Pharyngitis</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignments</td>
<td>● Read Chochrane Review on Pharyngitis 2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Read Acute Bacterial Sinusitis in Children. NEJM, 9/20/2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Read Clinical Practice Guidelines for the Diagnosis and Management of Acute Bacterial Sinusitis in Children Aged 1 to 18 Years. Pediatrics, 6/24/2013</td>
</tr>
<tr>
<td>May 7</td>
<td><strong>ID Pneumonia</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignments</td>
<td>● Read Community Acquired Pneumonia. NEJM, 2014</td>
</tr>
<tr>
<td>TBD</td>
<td><strong>Final Exam</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Online and multiple-choice</td>
</tr>
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</table>