Phar 6754 Diabetes and Metabolic Syndrome
Course Syllabus Spring 2017
2.1 Credits
January 11 – March 7, 2017

This course adheres to the items listed in the College of Pharmacy Central Syllabus: https://docs.google.com/a/umn.edu/document/d/1artQ5e1rbxe8lEtWo7BE8k8snZAEmMz-QcW8yJ-II/edit?pli=1

Meeting Times & Locations

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Duluth Room</th>
<th>Twin Cities Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>10:10 – 12:05</td>
<td>LSci 165</td>
<td>Moos 1-450</td>
</tr>
<tr>
<td>Wednesday</td>
<td>1:25 – 3:20</td>
<td>LSci 165</td>
<td>Moos 1-450</td>
</tr>
<tr>
<td>Thursday</td>
<td>1:25 – 3:20</td>
<td>Lib 410</td>
<td>WDH 7-135</td>
</tr>
</tbody>
</table>

Course Website: http://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

Duluth Course Director:
Sarah Schweiss, PharmD, BCACP (Duluth)
223 Life Science
218-726-6012
sschweis@d.umn.edu
Preferred method of contact: Email

Twin Cities Course Director:
Kylee Funk, PharmD, BCPS (Twin Cities)
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kafunk@umn.edu
Preferred method of contact: Email

Additional Course Instructors:

Pathophysiology Content Lead:
Carrie Haskell-Luevano, Ph.D.
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SAPh Content Resource:
Randall Seifert, Pharm.D.
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Teaching Assistants:
Crosby Tindal, P3 Student (Duluth)
tind0018@umn.edu

Kyle Walburg, P3 Student (Twin Cities)
walbu015@umn.edu
Course content:
In this course, students will learn the principles of the pathophysiology of diabetes, pharmacology of the antidiabetic agents, evaluate key research on diabetes, interpret and apply clinical guidelines for diabetes, assess socioeconomic aspects of diabetes, and apply this information to patient cases. Special populations with diabetes will also be discussed including pediatric, gestational, and geriatric diabetes.

Students will also learn the pathophysiology of metabolic syndrome, pharmacology of obesity treatments, nonpharmacological and pharmacological ways to treat metabolic syndrome, and apply this information to patient cases.

Students will apply all of the diabetes and metabolic information learned, in addition to content learned in the CV module during fall of their P2 year, to the development of a care plan for a patient with diabetes and metabolic syndrome.

Course format:
Students will be in class for up to 6 hours per week. In class time will consist of lectures, in-class case discussions, and team based learning experiences. Students will be expected to come prepared for class as assigned in the course syllabus, which will include assigned readings which will be applied during in-class case discussions. Assessments will be completed through quizzes, paper examination, presentations, assignments, and care plan documentation. This course will connect with content covered in the Pharmaceutical Care Learning Center for additional integration and application of knowledge.

Students will also be held responsible for this content in the integrated oral exam in the Spring PD2 semester.

Prerequisites
• Students will need to have successfully completed: Molecular metabolism/Nutrition, Cardiovascular Pharmacotherapy & Pharmaceutical Care Skills Lab 1-3.
• Students should be able to describe the physiology of insulin action, incretin hormones, amylin, and the fasting and fed states.
• Students should be able to describe how insulin is designed and manufactured.
• Students should be able to describe the following biochemistry topics: carbohydrate, lipid, and protein metabolism.
• Students should be able to assess a patient and determine most appropriate pharmacotherapy treatment options for a patient’s hypertension and dyslipidemia treatments, including ability to describe, interpret and apply evidence-based guidelines.
• Students should be able to describe how nutrition impacts energy production, utilization and storage, and obesity.
• Students need to be able to describe the caloric content of carbohydrates, proteins and lipids and be able to apply that knowledge to reading food labels and evaluating a patient’s nutritional status.
**Course Materials**

The following materials are required in this course:
- Koda-Kimble and Young's *Applied Therapeutics: The Clinical Use of Drugs*, current e-text edition

The following materials are required in this course:
- Calculator
- Laptop, notebook or ipad (device) to access internet during TBL and case sessions
- Clicker to participate in exercises (including TBL) that utilize TurningPoint

**Computer / Technology Requirements**

- The University of Minnesota computer requirements are listed here: [http://www1.umn.edu/moodle/start/technical.html](http://www1.umn.edu/moodle/start/technical.html)

**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. See COP Central Syllabus for information on what is considered an excused absence.

**Team-Based Learning (TBL) and Case Sessions**

*TBL and select case sessions will not be recorded.* If you are absent for a TBL session, and you don’t have an excused absence, you will receive 0 points for that session. TBL sessions can’t be made up. You can ‘catch up’ for test purposes by reviewing the required pre-class materials and by talking to your teammates. If you have an excused absence (see central syllabus for what is an excused absence), you will receive the class average score for the iRAT and your group grade for the tRAT and group case-based session (if graded). It is up to the discretion of the instructor whether you will need to complete an outside assignment to receive TBL or case points. Case sessions are excellent learning opportunities and you are expected to attend. No formal assessments will be done during case sessions, but material from case (and TBL) sessions will be assessed on exams.

**Course Goals & Objectives**

1. Students will be able to **explain** the pathophysiologic processes behind development of obesity, diabetes and metabolic syndrome and be able to **explain** the mechanisms of action of various hypoglycemic agents, including predicting risks and benefits of the individual agents.

2. Students will be able to **develop** an appropriate care plan for patients with diabetes, including assessment, establishment of goals of therapy, and choosing evidence-based, individualized pharmacotherapy for management of hyperglycemia and complications.

3. Students will be able to **develop** an appropriate care plan, including assessment, establishment of goals of therapy and choosing evidence-based, individualized pharmacotherapy to manage all aspects of the metabolic syndrome (hypertension, dyslipidemia, hyperglycemia and obesity) in patients in order to reduce risk of complications.

4. Students will be able to **describe** and **apply** relevant health quality measures, adherence data, clinical effectiveness evidence, safety profiles, and cost information for management of individual patients with diabetes/metabolic syndrome and overall population health.
Skill Development for lab:
- Students will be able to complete the following diabetes education skills:
- Be able to educate a patient on insulin injections, pen devices and other injectable diabetes medications.
- Be able to teach patients how to read food labels, count carbohydrates, and appropriately dose insulin based on an insulin to carb ratio.
- Be able to apply basic motivational interviewing skills in a simulated patient interview situation to encourage patient empowerment to manage diabetes and metabolic syndrome conditions

Assessments and Grading

The following graded assessments will count toward your final grade for this course in the following amounts:

<table>
<thead>
<tr>
<th>Title</th>
<th>Brief description</th>
<th>Learning Goal</th>
<th>Points</th>
<th>% of final grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz 1</td>
<td>Quizzes will primarily be MCQ, but may include short answer</td>
<td>Goal 1 Domains 6.3, 6.4</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>TBL activity – Diabetes Guidelines</td>
<td></td>
<td>Goal 2 Domain 1, 2, 6</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>Active Learning activity – Evaluation of Drug Literature</td>
<td></td>
<td>Goal 2 Domain 1, 2, 6</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td>Written Exam 1</td>
<td>Exam will be a mixture of MCQ and short answer questions</td>
<td>Goal 1 &amp; 2 Domain 1, 2, 6</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>Oral Exam</td>
<td></td>
<td>Goal 1 &amp; 2 Domain 1, 2, 6</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td>Diabetes Care Plan</td>
<td></td>
<td>Goals 2 &amp; 3 Domain 1, 2, 6</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>Quiz 2</td>
<td>Quizzes will primarily be MCQ, but may include short answer</td>
<td>Goal 2 &amp; 4 Domain 2, 3, 4</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>Drug Formulary Assignment</td>
<td></td>
<td>Goal 4 Domain 2, 3, 4</td>
<td>10</td>
<td>10%</td>
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<tr>
<td>Metabolic Syndrome Care Plan</td>
<td></td>
<td>Goals 2 &amp; 3 Domain 1, 2, 6</td>
<td>10</td>
<td>10%</td>
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<tr>
<td>Quiz 3</td>
<td>Quizzes will primarily be MCQ, but may include short answer</td>
<td></td>
<td>10</td>
<td>10%</td>
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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>
</tr>
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<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
All assignments must be turned in on time. Late work may be accepted in certain circumstances. Any unexcused late assignments, with prior approval from course directors, will result in a 10% reduction in the grade for every 24 hours it is late. Emergencies and other unforeseen events may be considered regarding late work. It is imperative that you contact your instructor before the due date for more information. Contacting your instructor after the due date may preclude any allowance for late work.

Assessment Policy
Student learning will be evidenced by performance on three quizzes, one multiple choice/short answer exam, oral exam content related to the course, one Team-Based Learning exercise, one active learning class session, two care plans (one related to diabetes, one related to metabolic syndrome), and one Drug Formulary Assignment.

Exams will not be graded on a curve. The use of electronic devices such as tablets, smartphones, programmable calculators, and other devices with electronic databases is not permitted during written or oral exams unless specified by course or section director. Standard analysis of composite class response for all exam questions will be conducted by the authors of those exams prior to releasing the grades. Should the University be closed due to an unforeseen event, the exam will be rescheduled. Seats may be assigned in the classroom for each exam. Instructors may provide seating instructions as you enter the room.

Exams and quizzes are not returned to the student. Post-exam review sessions with TAs will be scheduled within 2 weeks following each exam. Students will be given the opportunity to review their exams and quizzes at this time. Thus, students desiring to review their exams need to attend the scheduled review sessions. If you have extenuating circumstances that preclude participating in reviewing at the scheduled time, you may request an appointment with a TA to review the exam outside of those set times. Faculty discretion will be used to determine if the extenuating circumstance is reasonable. Any questions regarding exams should be referred to the course directors in writing.

Absence from Assessments: Please refer the Exam Make-Up Policy in the Central Syllabus

Grades will NOT be given out over the telephone or by email.

Minimum Passing Level
Per University and College Policy, students who receive a grade below D in this course must successfully repeat the course before advancing to courses which require this course as a prerequisite.
## Daily class and assessment schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic(s)</th>
<th>Assignment(s) &amp; Class Notes</th>
<th>Lead Instructor</th>
</tr>
</thead>
</table>
| Jan 11 | Course Introduction & Overview
Introduction to Diabetes
Pathophysiology of Diabetes & Long-Term Complications |  | Schweiss/Funk
Funk
Haskell-Luevano |
| Jan 12 | Pharmacology of Insulin
Clinical Use of Insulin |  | Haskell-Luevano
Schweiss |
| Jan 16 | No Class – Martin Luther King Day |  | |
| Jan 18 | Clinical Use of Insulin (cont.);
Intro to glucose monitoring and management |  | Schweiss
Smith |
| Jan 19 | Medical Nutrition Therapy
Pharmacology of antiglycemic agents | 24-hour food recall (due today) | Anderson
Haskell-Luevano |
| Jan 23 | Clinical use of antiglycemic agents (Type 2 Diabetes) |  | Schweiss/Funk |
| Jan 25 & Jan 26 | No Class – PDADs |  |  |
| Jan 26 17:00- Jan 27 24:00 | Quiz 1 (30 minutes, online):
Covers content from Jan 11 – Jan 23 | Quiz 1 |  |
| Jan 30 | Applying guidelines/evidence to diabetes care |  | Schweiss |
| Feb 1 | Management of Diabetes Complications
Geriatrics |  | Schweiss
Funk |
| Feb 2 | DM Guidelines TBL | *Class meets 1 hour | Holbrook |
| Feb 6 | Drug literature evaluation with diabetes study | DLE Active Learning | Engle |
| Feb 8 | DM Care Plan | Small group discussions *Class meets 1 hour | Schweiss/Funk |
| Feb 9 | Case studies: antiglycemic agents for type 2 diabetes |  | Funk |
| Feb 13 | EXAM 1 (1 hour In-Class):
Covers content from Jan 11 - Feb 9 | EXAM 1 *Class meets 1 hour | All Instructors |
| Feb 15 | Diabetes & Society |  | Okoro |
| Feb 16 | Quality care and payment for care: diabetes |  | Baker
Seifert |
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 20</td>
<td>Medication systems management</td>
<td>Seifert</td>
</tr>
<tr>
<td>Feb 22</td>
<td>Formulary Assignment Presentations – 10 minute presentations/group</td>
<td>Drug Formulary Assignment Due</td>
</tr>
<tr>
<td>Feb 23</td>
<td>Intro to metabolic syndrome (clinical)</td>
<td>Funk</td>
</tr>
<tr>
<td></td>
<td>Intro to metabolic syndrome (basic science)</td>
<td>Haskell-Luevano</td>
</tr>
<tr>
<td>Feb 23</td>
<td><strong>Quiz 2 (30 minutes) – covers material from Feb 15-20</strong></td>
<td>Quiz 2</td>
</tr>
<tr>
<td></td>
<td><strong>Feb 23 17:00-24:00</strong></td>
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<tr>
<td></td>
<td><strong>Feb 24 24:00</strong></td>
<td></td>
</tr>
<tr>
<td>Feb 27</td>
<td>Obesity treatments: nonpharmacological/ bariatric surgery</td>
<td>Funk</td>
</tr>
<tr>
<td>Mar 1</td>
<td>Obesity treatments: pharmacological</td>
<td>Funk</td>
</tr>
<tr>
<td>Mar 2</td>
<td>No class</td>
<td></td>
</tr>
<tr>
<td>Mar 6</td>
<td>Metabolic syndrome case discussion</td>
<td>Funk</td>
</tr>
<tr>
<td></td>
<td>*Individual care plan due before class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Class meets 1 hour</td>
<td></td>
</tr>
<tr>
<td>Mar 6</td>
<td><strong>Quiz 3 (30 minutes, online) Covers content from Feb 23- Mar 6</strong></td>
<td>Quiz 3</td>
</tr>
<tr>
<td></td>
<td><strong>Mar 6 17:00-24:00</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>Mar 7 24:00</strong></td>
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</tbody>
</table>

**Exam and quiz reviews are scheduled for the following dates: TBD**

**University of Minnesota and College of Pharmacy Policy Reference** *(Centralized Syllabus)*

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