Phar 6754 Diabetes and Metabolic Syndrome
Course Syllabus Spring 2019
2.1 Credits
January 16 – March 15, 2019

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-ll/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 1-451</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: https://canvas.umn.edu/courses/102979

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

Twin Cities Course Director:
Kylee Funk, PharmD, BCPS (Twin Cities)
7-176 Weaver Densford Hall
Phone: 612-301-8316
kafunk@umn.edu
Preferred method of contact: Email

Duluth Course Director:
Sarah Schweiss, PharmD, BCACP (Duluth)
223 Life Science
Phone: 218-726-6012
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Preferred method of contact: Email

Graduate Teaching Assistants:
Tony Olson (Duluth): olso2001@umn.edu
Joel Updyke (Twin Cities): updyk004@umn.edu

Additional Course Instructors:

Pathophysiology Content Lead:
Carrie Haskell-Luevano, Ph.D.
8-102 Weaver Densford Hall
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Professional Student Teaching Assistants:
Diana Ly (Duluth): lyxxx114@d.umn.edu
Emily Evan (Twin Cities): evanx013@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:

- Zeind and Carvalho’s *Applied Therapeutics: The Clinical Use of Drugs*, current e-text edition

The following materials are required in this course:

- Non-programmable calculator
- Laptop, notebook or ipad (device) to access internet during TBL 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. 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 Brief description</th>
<th>Learning Goal</th>
<th>Points</th>
<th>% of final grade</th>
</tr>
</thead>
</table>
| Quiz 1                  | Goal 1
Quizzes will primarily be MCQ, but may include short answer Domains 6.3, 6.4 | 10     | 10%              |
| TBL activity – Diabetes Guidelines | Goal 2
Domain 1, 2, 6 | 10     | 10%              |
| Active Learning activity – Evaluation of Drug Literature | Goal 2
Domain 1, 2, 6 | 5      | 5%               |
| Written Exam 1 Exam will be a mixture of MCQ and short answer questions | Goal 1 & 2
Domain 1, 2, 6 | 20     | 20%              |
| Oral Exam               | Goal 1 & 2
Domain 1, 2, 6 | 5      | 5%               |
| Diabetes Care Plan      | Goals 2 & 3
Domain 1, 2, 6 | 10     | 10%              |
| Quiz 2                  | Goal 2 & 4
Domain 2, 3, 4 | 10     | 10%              |
| Drug Formulary Assignment | Goal 4
Domain 2, 3, 4 | 10     | 10%              |
| Metabolic Syndrome Care Plan | Goals 2 & 3
Domain 1, 2, 6 | 10     | 10%              |
| Quiz 3                  |                      | 10     | 10%              |
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>
</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
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 are listed in the syllabus schedule. Quiz 2 and 3 will be reviewed at a date to be determined after spring break. 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. Regrade requests for exams and quizzes are due within one week of the review session. Regrade requests for assignments are due within one week of the grade being posted.

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>
<tbody>
<tr>
<td>Jan 16</td>
<td>Pathophysiology of Diabetes &amp; Long-Term Complications Pharmacology of Insulin</td>
<td></td>
<td>Haskell-Luevano</td>
</tr>
<tr>
<td>Jan 17</td>
<td>Course Introduction &amp; Overview Introduction to Diabetes Medical Nutrition Therapy</td>
<td></td>
<td>Funk/Schweiss Funk Brunzell</td>
</tr>
<tr>
<td>Jan 21</td>
<td>No Class – Martin Luther King Day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan 23</td>
<td>Clinical use of insulin</td>
<td></td>
<td>Schweiss</td>
</tr>
<tr>
<td>Jan 24</td>
<td>Clinical use of insulin</td>
<td></td>
<td>Schweiss</td>
</tr>
<tr>
<td>Jan 28</td>
<td>Pharmacology of antiglycemic agents Clinical use of antiglycemic agents (Type 2 Diabetes)</td>
<td></td>
<td>Haskell-Luevano Schweiss/Funk</td>
</tr>
<tr>
<td>Jan 30</td>
<td>Clinical use of antiglycemic agents (Type 2 Diabetes)</td>
<td></td>
<td>Schweiss/Funk</td>
</tr>
<tr>
<td>Jan 31</td>
<td>Clinical use of antiglycemic agents (Type 2 Diabetes) (cont.)</td>
<td></td>
<td>Schweiss/Funk</td>
</tr>
<tr>
<td>Feb 4</td>
<td>Quiz 1 (30 minutes, online, In-Class): Covers content from Jan 16 – Jan 31 Intro to glucose monitoring</td>
<td>Quiz 1</td>
<td>All instructors Smith</td>
</tr>
<tr>
<td>Feb 6 and 7</td>
<td>No Class – CPF Days</td>
<td></td>
<td></td>
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<tr>
<td>Feb 11</td>
<td>Applying guidelines/evidence to diabetes care</td>
<td></td>
<td>Schweiss</td>
</tr>
<tr>
<td>Feb 13</td>
<td>Management of Diabetes Complications Geriatrics</td>
<td></td>
<td>Schweiss Funk</td>
</tr>
<tr>
<td>Feb 14</td>
<td>DM Guidelines and Treatment TBL</td>
<td></td>
<td>Funk/Schweiss</td>
</tr>
<tr>
<td>Feb 18</td>
<td>DM Care Plan Quiz 1 review session</td>
<td>Small group discussions; Care plan due</td>
<td>Schweiss (and many facilitators) TAs</td>
</tr>
<tr>
<td>Feb 20</td>
<td>Drug literature evaluation with diabetes study</td>
<td>DLE Active Learning</td>
<td>Luczkak</td>
</tr>
<tr>
<td>Feb 21</td>
<td>Case studies: antiglycemic agents for type 2 diabetes</td>
<td></td>
<td>Bader</td>
</tr>
<tr>
<td>Feb 25</td>
<td><strong>EXAM 1 (1 hour In-Class): Covers content from Jan 16 - Feb 21</strong></td>
<td><strong>EXAM 1</strong> *Class meets 1 hour</td>
<td>All Instructors</td>
</tr>
<tr>
<td>Feb 27</td>
<td>Diabetes &amp; Society</td>
<td></td>
<td>Okoro</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Instructor(s)</td>
<td></td>
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<tr>
<td>Feb 28</td>
<td>Medication cost considerations</td>
<td>Schondelmeyer</td>
<td></td>
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<tr>
<td>Mar 4</td>
<td>Medication systems management</td>
<td>Seifert</td>
<td></td>
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<tr>
<td>Mar 6</td>
<td>Formulary Assignment Presentations – 10 minute presentations/group</td>
<td>Seifert/Funk</td>
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<tr>
<td>Mar 7</td>
<td>Intro to metabolic syndrome (clinical)</td>
<td>Funk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intro to metabolic syndrome (basic science)</td>
<td>Ericson</td>
<td></td>
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<tr>
<td></td>
<td><strong>Exam 1 review session</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar 11</td>
<td>Quiz 2 (30 minutes, online in class) – covers material from Feb 27- Mar 4</td>
<td>Quiz 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obesity treatments: nonpharmacological/ bariatric surgery</td>
<td>All instructors</td>
<td></td>
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<tr>
<td>Mar 13</td>
<td>Obesity treatments: pharmacological</td>
<td>Funk</td>
<td></td>
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<tr>
<td>Mar 14</td>
<td>Metabolic syndrome case discussion</td>
<td>Funk</td>
<td></td>
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<tr>
<td></td>
<td>*Care plan and assignment due before class</td>
<td></td>
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<tr>
<td></td>
<td>*Class meets 1 hour</td>
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<td></td>
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<tr>
<td>Mar 14</td>
<td><strong>Quiz 3 – Online (30 minutes). Covers content from Mar 7-Mar 14</strong></td>
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</tbody>
</table>

**Quiz 2 and 3 reviews are scheduled for the following dates: TBD**

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

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