# PHAR 6784: Integrated Oncology

## Course Syllabus
PDIII – Spring 2016
2.8 Credits

Course Web Site: http://moodle.umn.edu

## 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>Weds</td>
<td>9:05 – 9:55</td>
<td>Life Sci 163</td>
<td>MT 1-450</td>
</tr>
<tr>
<td>Fri</td>
<td>10:10 – 12:05</td>
<td>Life Sci 165</td>
<td>MT 1-450</td>
</tr>
</tbody>
</table>

## Course Instructional Team

### Faculty Office Hours: by appointment

### Course Director(s)
- Venkatram Mereddy
- Mark Kirstein

### Instructors
- **Venkatram Mereddy**
  - Office: Room CHEM 136
  - Phone: 218-726-6766
  - Email: vmereddy@d.umn.edu
  - Preferred method of contact: email
- **Mark Kirstein**
  - Office: Room 459 of 717 Delaware
  - Phone: 612 624-5689
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- **Tim Stratton**
  - Office: 209 LSci
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  - Email: tstratto@d.umn.edu

- **Chenguo (Chris) Xing**
  - Office: 2-125 CCRB
  - Email: xingx009@umn.edu

- **Paul Ranelli**
  - Office location: 111 LSci
  - Phone: 218-726-6009
  - Email: pranell@d.umn.edu
  - Preferred method of contact: email

- **Pamala Jacobson**
  - Office location: 7-151 WDH
  - Phone: 612-624-6118
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- **Olihe Okoro**
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  - Phone: 218-726-6036
  - Email: ookoro@d.umn.edu
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- **Lisa Lohr**
  - Office location: 209 LSci
  - Phone: 218-726-6018
  - Email: llohr@umn.edu
  - Preferred method of contact: email

- **Rebecca Fahrenbruch**
  - Office location: 209 LSci
  - Phone: 218-726-6018
  - Email: rahren@umn.edu
  - Preferred method of contact: email
Guest lecturers and external speakers’ bios will be posted in Moodle for students.

Detailed Course Schedule

For a detailed course outline and schedule, see the document “Phar 6784 Integrated Oncology Schedule PD3Spring 2016” on the moodle site.

Overview of the course

Course content:
Integrated Oncology will focus on the etiology & molecular biology of tumorigenesis, medicinal agents & pharmacology of anticancer agents, treatment of the most common cancers, supportive care of the patient with cancer, and social and ethical considerations of the treatment of the patient with cancer including end of life directives.

Course format:
This will be a lecture-based course with frequent assessment to ensure students understand the course concepts. The majority of the course will be taught by College of Pharmacy faculty. The supportive care topics and chemotherapy orders exercise will be taught by guest lecturers. The assessments include 4 scheduled quizzes, in-class pop quizzes, and 3 exams. Students will apply their knowledge by writing a paper on a cancer not specifically covered in the course (e.g., renal cell carcinoma, melanoma, etc.). Students should expect to spend 10-15 hours a week on this course.

Prerequisites

• PD3 student in good academic standing

Students may find it helpful to review the following topics:

- Principles of Biochemistry
  - Lipids (Structure/Function)
  - Proteins (Folding/Conformation)

- Cellular Physiology, Molecular Biology, Genetics
  - Cell Biology (signal transduction, DNA replication, transcription, protein translation, cell cycle, apoptosis)
  - Immunology
  - Tumorigenesis
  - Angiogenesis
  - Genetics principles
  - Anatomy/Physiology (GI tract, pulmonary, hormone and feedback regulation)

Course Materials

Required
- Evidence based treatment guidelines (provided in class, used as reference)
- Assigned patient cases (provided in class)

Optional (use as reference):
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)

- Moodle: This course will use Moodle to distribute resources and host course information. See Moodle setup requirements at [http://www1.umn.edu/moodle/start/technical.html](http://www1.umn.edu/moodle/start/technical.html).
- E-Textbooks: Students will access College-provided e-texts through the course Moodle site.
- E-Mail: Course instructors might communicate through email about course administrative issues. Students should check their U of M email daily.
- Student-response systems: Discussions and pop quizzes might use TurningPoint software. Students might need a TurningPoint clicker or app.

Course Goals & Objectives

1. Describe the role of a pharmacist in the screening, prevention, and treatment and improvement of quality of life for the patient with a malignancy and communicate appropriate information to healthcare professionals and patients.

2. Describe the etiology, the 6 hallmarks of cancer including molecular and cellular biology (i.e., signal transduction, DNA replication, transcription, translation, cell cycle, apoptosis) of tumorigenesis and metastasis, and angiogenesis.

3. Identify, describe, classify drugs to treat human malignancies (cytotoxic agents, targeted small molecule inhibitors, antibodies), including structure activity relationships, and mechanisms of action.

4. Describe the pharmacologic basis for drug-induced effects on cell cycle and interference with cell function related to the 6 hallmarks of cancer (i.e., limitless replicative potential, sustained angiogenesis, self-sufficiency in growth signals, etc.).

5. Molecular and pharmacologic basis for drug-induced adverse effects and drug-induced resistance.

6. Describe pharmacologic basis for building treatment regimens with combinations of agents that maximize antitumor effects and minimize adverse events (e.g. non-overlapping toxicities, agents with different MOA, etc.)

7. Describe effective screening methods, symptoms, diagnosis, and treatment for the most commonly occurring diseases presented in the course, and develop an approach for learning about disease states and agents NOT presented in this course.

8. Build treatment regimens for supportive care of the patient with cancer (antiemetic, cancer-associated pain management, oral agent adverse effects, etc).

9. SAPh
   a. Compare and contrast the attitudes towards cancer among patients of different ethnic origins
   b. Describe caregiving stress and burnout symptoms and the effects experienced by older caregivers.

10. SAPh (Ethics)
    a. Describe the purpose of Advance Directives
    b. Direct patients to resources for preparing an Advance Directive

11. SAPh (Pharmacoeconomics/Ethics): Discuss the intersection between pharmacoeconomic considerations of cancer treatment and distributive justice
**Assessments and Grading**

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

<table>
<thead>
<tr>
<th>#</th>
<th>Due Date</th>
<th>Title Brief description</th>
<th>Learning Objective</th>
<th>Points</th>
<th>% of final grade</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Various dates</td>
<td>Quizzes - Online (closed resource), non-comprehensive</td>
<td>LO 1-11</td>
<td>50</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>throughout course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Various dates</td>
<td>Pop quiz(s) – in class, written or clicker (instant feedback; closed resource)</td>
<td>LO 1-11</td>
<td>25</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>throughout course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dates approximately</td>
<td>Exams (3) written, closed resource, in class or online, non-comprehensive</td>
<td>LO 1-11</td>
<td>300</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>each tertile of semester</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Weeks 14 and/or 15</td>
<td>Team Term paper (3-4 pages, single spaced, with references) Teams – 3-4 students per team - another team will review before submission</td>
<td>LO 1-11</td>
<td>125</td>
<td>25%</td>
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<tr>
<td></td>
<td></td>
<td>total: 500</td>
<td></td>
<td>100%</td>
<td></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>
</thead>
<tbody>
<tr>
<td>%</td>
<td>100-93.0</td>
<td>92.9-90</td>
<td>89.9-87</td>
<td>86.9-83</td>
<td>82.9-80</td>
<td>79.9-77</td>
<td>76.9-73</td>
<td>72.9-70</td>
<td>69.9-60</td>
<td>59-0</td>
</tr>
</tbody>
</table>

**Assignments and Assessments**

**Quizzes**
Scheduled quizzes will be given online, taken individually, and closed resource. Unannounced pop quizzes will be given in class, taken individually, closed resource.

**Exams**
Three exams will be taken in-class or online, individually, closed resource. Students will have one-hour period to complete each exam.

**Term Paper (Teams of 3-4)**
Students will apply their knowledge by writing a paper on a cancer not specifically covered in the course (e.g., renal cell carcinoma, melanoma, etc). Papers should be 3-4 pages long, single spaced, with references. A grading rubric and sample paper will be provided. Students will be assigned to groups randomly (e.g., alphabetically), in an effort to mix those with strong writing/communication skills with those who may have less. Gender mix will also be an important consideration. The intention is to help students to develop an approach to learning about topics not covered through traditional class methods, so that they can be better prepared for handling similar encounters while on rotation and beyond. This is also expected to give students more experience in working with others whom they do not choose since this would be the case in practice (e.g., rounding teams).
Course Policies

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.

Absence from Exams
Make-Up Exams will not be offered unless absence is consistent with University Make-Up Policy.

Statement on Penalties for Late Work
Late work will not be accepted (except for absences in accordance with University Make-Up Policy)

Statement on Extra Credit
No extra credit will be offered.

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.

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