

MEDS 445: CANCER: Oncology in the Modern Era
Spring 2016

Wednesdays 10:00 – 11:50 AM, 1 hour 50 minutes

2 units

INSTRUCTORS:

- Diane Da Silva, Ph.D., M.S., Assistant Professor of Obstetrics & Gynecology, Keck School of Medicine of USC
 - o Office Address: 1450 Biggy Street, NRT 7517, Los Angeles, CA 90089-9601
 - o Office Phone: (323) 442-3868
 - o Office hours by appointment: please contact Dr. Da Silva at ddasilva@usc.edu
- Guest Faculty from the Keck School of Medicine
- Guest Speakers from LAC+USC and community partners

TEACHING ASSISTANT:

- Julia Taylor, PhD Candidate, Keck School of Medicine
 - o juliatay@usc.edu

ADMINISTRATIVE ASSISTANT:

- Elizabeth Chau, Program Specialist, Minor in Health Care Studies
 - o chaue@usc.edu

Introduction and Purpose

Course Description: This course introduces students to the spectrum of clinical and scientific issues surrounding contemporary cancer care – research, risk factors and prevention, molecular diagnostics, genomic medicine, modern therapeutics, survivorship and community/patient engagement.

Overview: This is a course for students interested in the diverse nature of cancer medicine. The rapid development of new treatments and their companion diagnostic tests creates algorithms/clinical pathways for treating patients with cancer. However, treating cancer involves more than just diagnosis and treatment. This course pairs didactic sessions with practical sessions. These sessions will span the entire spectrum of cancer care:

1. **Non-clinical:** Education, Population studies, Biotechnology diagnostic tools (use, integration into clinical care); Cancer drug development (how does a new drug come onto the market?); Development and use of biomarkers; Translational research
2. **Clinical:** Prevention programs; Clinical trials; Women's Cancer; Fertility Preservation, Psychosocial issues; Genetics and personalized medicine; End-of-life/Hospice care, Survivorship

Topics covered in this course will cover 4 cancer-related themes:

1. Cancer Screening & Prevention
2. Cancer Genetics
3. Cancer Therapies
4. Cancer Clinical Care

Upon successful completion of this course, the student should be able to demonstrate a working knowledge of:

- The importance of bridging basic molecular research with personalized patient care
- Evaluation and application of population-based methods used in contemporary oncology
- How cancer drugs are developed and approved for clinical use
- Critical interpretation of clinical trials in oncology: preventive and therapeutic
- How companion diagnostics are used in cancer prevention and clinical care
- Treating the cancer patient as a whole, not just the cancer cells
- Hands-on experience as a cancer care provider in the community, for example in patient advocacy, philanthropy, education, research, or clinical care.

Course Requirements and Grades

- Course prerequisites: MEDS-220, BISC220L. Recommended: BISC150L, BISC221L
- There is no required textbook for the course. Course material will be drawn from a variety of sources and catalogued on-line using the on-line learning management system.
- Course materials include a selection of articles from the peer-reviewed medical literature. These required readings are listed below under Class Sessions. Additional readings may be assigned.
- The course will consist of one 1-hr 50-min class meeting each week, which will involve a dynamic combination of lecture, class discussion and special guests. A minimum of 2 hours per week should be scheduled by the student with the project mentor for the hands-on experience. This can be averaged over several weeks (for example, 8 hours per month)

- Prior to each class meeting, students will receive communication with material to read, listen to, and/or watch in preparation for the session. Students will be expected to be able to discuss the material during class.
- Final Project/Practicum:
 - Option #1: Students will be paired up with a pre-selected list of mentors belonging to a program/group/research lab that has a “short-term” project or shadowing opportunity. Some projects may require the student to complete additional online training certifications (e.g. CITI Human subjects education course, HIPAA, Responsible Conduct of Research). The Student will participate in all planning aspects of this project to gain practical experience and should spend 2 hours minimum per week averaged across 4 weeks working with the project mentor. Last 2 class sessions, students will present (10-15 min) their project with appropriate background, goals and outcomes. Students may also find a project/project mentor on their own, but must get pre-approval from course director. Students are expected to meet with their project mentor regularly for feedback and instruction and project mentors will be asked to provide student evaluations to the Course Director at the end of semester. Examples of projects are laboratory and clinical research, community outreach, education, and hospice care. A 4-5 page written report summarizing the Student’s hands-on experience will be due on the last day of class.
 - OPTION #2: Students may choose to write a research paper on a cancer-related topic of their choosing or choose from a list of suggested topics at the beginning of the semester. Students will present their research topic for the final practicum in the last two class sessions. A 4-5 page written paper will be due on the last day of class. Students choosing this option for a project will meet regularly with course instructor or TA for mentoring and weekly updates.
- Travel to HSC campus, or off-campus locations on your own time, may be required to participate in mentored clinical and non-clinical projects.
- Grading:
 - o Practicum progress reports (3 written reports submitted every 4 weeks by the student): 10% each (total 30%)

- o Take-home midterm exam (20%): Due Sunday, March 13, 2016, by 11:59 pm PST, uploaded to Blackboard. Midterms submitted after the due date are subject to a late penalty of 10% per day.
- o Class participation: 10%
 - Note: A maximum of 2 absences (excused or unexcused; illness, leave, etc.) are permitted for full class participation credit. Three or more absences will result in 0 (of 10 points) for the class participation portion of the course.
- o Mentor evaluation of student participation and effort (submitted at end of course): 5%
- o Presentation (15%) and written report (20%) of final project. Written reports (final) are due on May 4, 2016, by 11:59 pm PST, uploaded to Blackboard. Papers submitted after the due date are subject to a late penalty of 10% per day.
- Grading Scale:

A	94-100
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	75-76
C-	74-70
D+	69-67
D	66-64
D-	63-60
F	59-0

Class sessions: 15 Sessions (60-90 minutes each) Total:

- Week 1: Orientation: Expectations, Requirements, Format
- i. a. Non-clinical vs. Clinical Overview
 - ii. b. Sign-up for final project/research topic by end of week #2

“Introduction to Cancer”

(Lecture: Diane Da Silva, PhD, MS)

Required reading:

1. Ferlay J *et al.* (2014). Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer* 2014 Sep 13. doi: 10.1002/ijc.29210.

Week 2: Clinical utilization of molecular diagnostics in screening and cancer care
(Lecture: Diane Da Silva, PhD, MS)

Required reading:

1. Feero WG *et al.* (2010). Genomic Medicine – An Updated Primer. *N Engl J Med* 362:2001-2011.

Week 3: Cancer education and community outreach
(Guest speaker: Zul Surani)

Required reading:

1. TBD

Week 4: Primary and secondary cancer prevention in low resource settings
(Guest speaker: Victoria Cortessis, PhD)

Required reading:

1. Miller JW *et al.* (2014). Public health national approach to reducing breast and cervical cancer disparities. *Cancer* 120:2537-2539.
2. National Cancer Institute Fact Sheet: Cancer Health Disparities.
<http://www.cancer.gov/cancertopics/factsheet/disparities/cancer-health-disparities/print>

Week 5: Cancer epidemiology and risk associations
(Guest speaker: Wendy Setiawan, PhD)

Required reading:

2. Setiawan VW *et al.* (2014). Diabetes and racial/ethnic differences in hepatocellular carcinoma risk: the multiethnic cohort. *J Natl Cancer Inst* 106(12): dju326 doi:10.1093/jnci/dju326
3. Setiawan VW *et al.* (2015). Association of coffee intake with reduced incidence of liver cancer and death from chronic liver disease in the US Multiethnic Cohort. *Gastroenterology* 148:118–125.

Week 6: Bench to Bedside: Translational research and cancer clinical trials
(Lecture: Diane Da Silva, PhD, MS)

Required reading:

1. DeVita VT and Rosenberg SA. (2012). Two Hundred Years of Cancer Research. *N Engl J Med* 366: 2207-2214.
2. Doroshow JH and Kummar S (2014). Translational research in oncology – 10 years of progress and future prospects. *Nat Rev Clin Oncol* 11:649-662.
3. Berry DA (2011). Adaptive clinical trials in oncology. *Nat Rev Clin Oncol* 9:199-207.

Week 7: Physicians perspective of familial colorectal cancer and treatment
(Guest speaker: Greg Idos, MD)

Required reading:

1. TBD

Week 8: Cancer genetic testing and counseling
(Guest speaker: Charité Ricker, MS, CGC)

Required reading:

1. Cybulski C *et al.* (2014). Multiple primary cancers as a guide to heritability. *Int J Cancer* 135:1756-1763.
2. Finding risks, not answers, in gene tests. NY Times article. http://www.nytimes.com/2014/09/23/health/finding-risks-not-answers-in-gene-tests.html?_r=2
3. Breast cancer genetic screening: Knowing if you carry a mutation only part of the equation. Chicago Tribune article. <http://www.chicagotribune.com/lifestyles/health/breastcancer/sc-health-0924-bc-genetic-mutations-20140925-story.html#page=1>
4. My Cancer Story, My Genes, My Information. Huffington Post article. http://www.huffingtonpost.com/joanna-rudnick/free-the-data_b_4283862.html
5. Filmmaker Joanna Rudnick on life with the “Breast cancer gene” and human gene patenting. <http://www.pbs.org/pov/blog/povdocs/2013/04/filmmaker->

[joanna-rudnick-on-life-with-the-breast-cancer-gene-and-human-gene-patenting/#.VMqcn78e0J](http://www.pbs.org/pov/inthefamily/)

6. Watch the short documentary, *In the Family*, directed by Joanna Rudnick, prior to class. Available through NetFlicks, Amazon, Hulu Plus, or websites below.
<http://www.pbs.org/pov/inthefamily/>
<http://www.cultureunplugged.com/play/9605/In-the-Family>

Week 9: Bioethics in cancer research and medicine
(Guest speaker: Terry Church, MA)

Required reading:

1. Moore v. Regents of University of California: Insufficient Protection of Patients' Rights in the Biotechnological Market. *GEORGIA LAW REVIEW* 1991 Winter; 25(2): 489-533.
2. Feldman R. (2011). Whose body is it anyway? Human cells and the strange effects of property & intellectual property law. *Stanford Law Review* 63(6):1377-1402.

Week 10: Cancer vaccines and immunotherapy
(Lecture: Diane Da Silva, PhD, MS)

Required reading:

1. Gilboa E. (2005). The promise of cancer vaccines. *Nature Rev Cancer* 4:401-411.

Week 11: Cancer in the Adolescent Young Adult (AYA) population
(Guest speaker: Debbie Morgan, MSN, RN)

Required reading:

1. Zebrack B and Isaacson S. (2012). Psychosocial care of adolescent and young adult patients with cancer and survivors. *J Clin Oncol* 30: 1221-1226.
2. Wein S *et al.* (2010). Role of palliative care in adolescent and young adult oncology. *J Clin Oncol* 28: 4819-4824.

Week 12: Molecular Oncology and Personalized Genomic Medicine
(Guest speaker: TBD)

Required reading:

1. McDermott U *et al.* (2011). Genomics and the Continuum of Cancer Care. *N Engl J Med* 364: 340-350.

Week 13: Fertility preservation in the cancer patient
(Guest speaker: Karine Chung, MD, MS)

Required reading:

1. Jeruss JS and Woodruff TK (2009). Preservation of fertility in patients with cancer. *New Engl J Med* 360:902-911.
2. Levine J *et al.* (2010). Fertility preservation in adolescent and young adults with cancer. *J Clin Oncol.* 28: 4831-4841.

Week 14: End of Life/Palliative Care for cancer patients
(Guest speaker: TBD)

Required reading:

1. Greer JA (2013). Early integration of palliative care services with standard oncology care for patients with advanced cancer. *CA Cancer J Clin* 63:349-63.

Week 15: Student Presentations (Full class period will be used)

Week 16: Student Presentations (Full class period will be used)

Final Exam paper due by 11:59 pm on Wednesday, May 4, 2016.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to Dr. Lew as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Emergency Preparedness/Course Continuity:

In case of emergency, and travel to campus is difficult, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies. Instructors should be prepared to assign students a "Plan B" project that can be completed at a distance. For additional information about maintaining your classes in an emergency please access: <http://cst.usc.edu/services/emergencyprep.html>

Please activate your course in Blackboard with access to the course syllabus. Whether or not you use Blackboard regularly these preparations will be crucial in an emergency. USC's Blackboard learning management system and support information is available at blackboard.usc.edu.