General Education Course Information Sheet
Please submit this sheet for each proposed course

Department & Course Number MIMG 98T
Course Title Prostate Cancer – Scientific and Social Implications of an Aging Society

1. Check the recommended GE foundation area(s) and subgroups(s) for this course

Foundations of the Arts and Humanities	
• Literary and Cultural Analysis	
• Philosophic and Linguistic Analysis	
• Visual and Performance Arts Analysis and Practice	
Foundations of Society and Culture	
• Historical Analysis	
• Social Analysis	
Foundations of Scientific Inquiry	
• Physical Science	
With Laboratory or Demonstration Component must be 5 units (or more)	
• Life Science	X
With Laboratory or Demonstration Component must be 5 units (or more)	

2. Briefly describe the rationale for assignment to foundation area(s) and subgroup(s) chosen.
The course will primarily focus on basic and medical research concerning prostate cancer as well as how age-related diseases such as prostate cancer will affect our aging society.

3. List faculty member(s) and teaching fellow who will serve as instructor (give academic rank):
Daniel Smith, Graduate Student Researcher and Dr. Owen Witte, Investigator/Prof/Director

4. Indicate what quarter you plan to teach this course:

2012-2013 Winter X Spring_____

5. GE Course units 5.

6. Please present concise arguments for the GE principles applicable to this course.

❑ General Knowledge	This course with emphasize use of primary literature to learn about how scientists approach research problems from generating a hypothesis, designing experiments and interpreting results. The ability to learn through primary literature will be invaluable to students as they progress in their studies.
❑ Integrative Learning	Students will use primary literature to learn how using multiple techniques

	to address a single question can lead to more robust and developed insight into the mechanisms that drive tumorigenesis.
❑ Ethical Implications	This course will examine how biomedical research is conducted ethically and safely with respect for the patients and experimental animals. Additionally, the students will learn about current debates concerning prostate cancer diagnosis and treatment and the ethical implications.
❑ Cultural Diversity	
❑ Critical Thinking	A central component of this course will be centered on analysis and discussion of primary source material and will assist students in developing critical analysis skills necessary for assessing the quality of primary literature.
❑ Rhetorical Effectiveness	Students will be required to submit a final term paper as part of this course. The students will be expected to identify a topic or question related to the prostate cancer field, generate a hypothesis and provide reasoned support from the literature.
❑ Problem-solving	Students will be expected to develop their ability to identify unanswered questions within a scientific field from primary literature and develop testable hypotheses and experiments to address these questions.
❑ Library & Information Literacy	Students will not be given their primary literature assignments but rather expected to use tools such as PubMed and Google Scholar to find them. Additionally, some source material will not be available online and will require finding the sources using library resources. In class tutorials and "field trips" to the Biomedical Library will be used to learn how to use these tools.

(A) STUDENT CONTACT PER WEEK		
1. Seminar:	3	(hours)
(A) TOTAL student contact per week	**3**	**(HOURS)**

(B) OUT-OF-CLASS HOURS PER WEEK (if not applicable write N/A)		
1. General Review & Preparation:	**2**	(hours)
2. Reading	**5**	(hours)
3. Group Projects:	**N/A**	(hours)
4. Preparation for Quizzes & Exams:	**N/A**	(hours)
5. Information Literacy Exercises:	**N/A**	(hours)
6. Written Assignments:	**3**	(hours)
7. Research Activity:	**2**	(hours)
(B) TOTAL Out-of-class time per week	**12**	**(HOURS)**

GRAND TOTAL (A) + (B) must equal 15 hours/week **15**

MIMG 98T – *Prostate Cancer: Scientific and Social Implications of an Aging Society*

Instructor Information

Daniel Smith
Microbiology, Immunology and Molecular Genetics Department
Dasmith08@ucla.edu

Seminar Overview

Currently, prostate cancer remains the most highly diagnosed cancer in Western men and the second leading cause of cancer death in America. The strongest and most consistent risk factor for prostate cancer remains age. When taken in the context of our aging population, prostate cancer presents an ever-increasing social, medical and scientific problem. The role of scientific inquiry is to explore the depths of our world and translate those findings into medical and technological benefit. However, there remain deep divisions in what benefits we as a society require most and as such, exert pressures upon the scientific community. This course will delve into and discuss how scientific research shapes this unique social dilemma, as well as how these societal pressures can impact and direct scientific research itself. As part of this course, students will be expected to read and critically assess scientific literature in an effort to develop their ability to learn from primary literature. Students will be encouraged to identify central questions within the literature, the hypothesis to be tested and critically assess the extent to which the authors achieved their goal. These readings will serve as the foundations to open up the broader discussion of how the authors' research fits into the larger picture and shapes this mounting social problem.

Seminar Objectives

1. Understand basic biology of the prostate and how this informs prostate cancer research.
2. Learn how researchers use the scientific method to identify and approach problems in cancer research.
3. Use reading assignments and class discussion to develop skills in critical analysis and self-learning through primary literature.
4. Practice utilizing online databases and programs necessary to effectively search for scientific sources.
5. Improve writing styles, analytical skills, and paper structure through the term paper assignment
6. Improve presentation comfort and skills with oral presentation projects.

Course Policies

Office Hours
At this time, office hours are scheduled for the hour immediately prior to each designated class meeting. I do not have an office, so I will hold my office hours at the Bombshelter. If it's sunny, look for me on the grassy roof area. When it's raining, I'll be inside. Within reason, I will also be available for meetings by appointment, but please limit this to dire need type circumstances.

Late Assignments
Late assignments will not be accepted unless there are documented extenuating circumstances. In the event of an emergency, please let me know as soon as possible and we will make appropriate arrangements.

Plagiarism
Please familiarize yourself with the UCLA policies on cheating and plagiarism, which are available online http://www.studentgroups.ucla.edu/dos/assets/documents/StudentGuide.pdf. These policies will be taken very seriously and any misconduct will be reported to the appropriate UCLA administrative officials with no exceptions.

Grade changes
Final grades cannot be changed for any reason except in the case of a clerical error.

Accommodations for disabilities
If you wish to request an accommodation due to a disability, please contact the Office for Students with Disabilities as soon as possible at A255 Murphy Hall, (310) 825-1501 [or (310) 206-6083 (TDD)], or *www.osd.ucla.edu*. I am more than happy to accommodate students with disabilities though they must be registered with the OSD.

Required Readings

Each discussion session will have **at least one (1)** required reading with additional optional readings. Most of these readings will be primary and secondary scientific literature sources. As one of the objectives of this course is learning how to search for scientific papers, only the citations will be provided and students will be expected to use search engines described in class to find the required materials. Any additional readings from other sources will be provided to the students.

Assignments

1. ACTIVE Participation 20% (~11 pts per discussion, 18 discussion meetings)
2. Foundation papers 15% (15 pts per paper, 10 papers)
3. Seminar Synopses 10% (50 pts per seminar, 2 seminars)
4. Student Presentation 20% (200 points)
5. Term Paper 35% (350 points)

Active Participation
This means that you DO NOT get points for simply showing up to class, but rather for actively contributing to the discussion of the assigned literature. Primary literature can be difficult, and it is my goal to help you understand the material through our discussions. Therefore, the discussions do not need to be profound, but rather anything that actively contributes to the class learning environment. Science is inquisitive at its heart and those involved in learning should be so as well.

Foundation Papers
Primary literature is advanced material will require a more interactive, versus passive, reading style. For each assigned **primary literature source**, students will be required to write a paragraph that outlines the CENTRAL QUESTION being asked, the investigators HYPOTHESIS and a brief outline of the SCIENTIFIC APPROACH. This is designed to help the students begin to interact with the material and provide a foundation upon which we can build a discussion in class. These foundation papers should be no more than one (1) page.

Seminar Synopses
UCLA invites a broad variety of researchers from around the world to present their work in a seminar format. One of my goals for our seminar series is to introduce students to this key arena of scientific presentation and discussion. As such, students will be required to attend two (2) seminars during the quarter and write a short synopsis concerning the presented work. The IMED seminar series is a particularly good series that brings in some of the world's top researchers.

Student Presentations
The students will present their final paper topics to the class in the last two weeks of class. Students should provide an introduction to their topic and a brief discussion of the literature they plan to cite. Students will be required to participate in the discussion and should provide positive and critical feedback. Presenters should use this as a final opportunity to strengthen their term paper based on student and instructor feedback. Each presentation should be 10-15 minutes in length, taking into account time for questions and discussion.

Term Paper

Each student is required to write a 3-5 page paper (double spaced) concerning a topic pertinent to prostate cancer research and must include at least **two (2) primary sources** and **two (2) secondary literature sources**. This paper should identify a question within the prostate cancer field, provide a succinct background and a working hypothesis. Each paper should include at least one (1) aim and design an experiment to address their hypothesis. DON'T PANIC! The emphasis of this paper should be on providing a concise argument supporting the intellectual merit of your question and is not intended to be an in depth scientific article. Each paper should consist of the following:

ABSTRACT

The abstract should act as a summary of your paper and concisely introduce your question, rationale, hypothesis, aim and your conclusion. This should convey to the reader the scope and salient points of your paper and should be no more than 200 words.

INTRODUCTION AND BODY

This should introduce the topic that you will be discussing and provide relevant background necessary to understand your question and will comprise the bulk of your paper. Students will be expected to explain their rationale and provide support that describes why their question is pertinent and merits investigation. Finally, the students should explicitly state their hypothesis as it pertains to their question.

SPECIFIC AIM

Students will be required to design an experiment that can be used to test their hypothesis. This does not need to be complicated or in depth technical description, but rather a simple experiment that could be used to provide data that will either prove or disprove the student's hypothesis. Describing controls and anticipated results are encouraged.

CONCLUSION

In this section, the students will conclude their arguments, describing their question, hypothesis and how their experiment can provide data to support their hypothesis. The students should also provide insight into how this data could potentially lead to further investigation of additional questions, placing their proposed work within the context of the larger scientific picture.

Students should begin thinking of a topic early and there will be a sign-up for a MANDATORY one-on-one meeting in Week 4 to discuss your paper topic with me. Students will develop an outline that will be due in Week 5 (50 points). Rough drafts (50 points) will be peer reviewed (50 points to the REVIEWER) in class during Week 7 with a final draft (200 points) due in Week 10. This iterative process is designed to help students stay on track and experience the peer review process, an important cornerstone in scientific publishing. Peer reviews will be graded and should be strive to be insightful rather than simply checking spelling and grammar.

Course Schedule and Required Reading List

Week 1 (January 7)	
Discussion 1 – Introduction to Scientific Literature	Required Reading
- **Questions and Stories: the WHY and HOW of scientific research.** - **What is the scientific method? How is this used to organize scientific inquiry into a focused project?** - **What are the basic components of primary scientific literature?** - How can we efficiently search for primary literature?	Gillen, C.M., et al. (2004). An online tutorial for helping nonscience majors read primary research literature in biology. *Advan in Physiol Edu* **28**, 95–99. "How do Tumors Grow?" Cassandra Willyard, Scientific American, Aug. 4, 2011.
Discussion 2 - Cellular Transformation	
- What exactly is cancer? Why is it so difficult to treat? - **What does it mean for a cell to undergo "transformation"?** - **How is prostate cancer similar to other cancers? What are some of the attributes of prostate cancer that make it unique?**	Hanahan, D. & Weinberg, R. A. Hallmarks of Cancer: The Next Generation. *Cell* 144, 646–674 (2011). Abate-Shen, C. & Shen, M. M. Molecular genetics of prostate cancer. *Genes Dev.* **14**, 2410–2434 (2000) (**Optional)**
Week 2 (January 14)	
Discussion 3 – Techniques commonly used in cancer research	Required Reading
- **What is the difference between *in vitro* and *in vivo* experiments?** - How do we derive cell lines? What is the difference between cell culture and xenografts?	*Lawson, D.A., et al. (2007) Isolation and functional characterization of murine prostate stem cells. *Proceedings of the National Academy of Sciences* **104**, 181-186. Xin, L. et al. (2003). In vivo regeneration of murine prostate from dissociated cell populations of postnatal epithelia and urogenital sinus mesenchyme. *Proceedings of the National Academy of Sciences* **100**, 11896–11903. **(Optional)**
Discussion 4 – Techniques, continued.	
- **What are the primary advantages and disadvantages of using animal models of cancer?** - What is the difference between a transgenic and a knock-in/knock-out animal model? - What is the role of tumor suppressors in prostate cancer development?	*Wang, S., et al. (2003). Prostate-specific deletion of the murine Pten tumor suppressor gene leads to metastatic prostate cancer. *Cancer Cell* **4**, 209–221. Li, J. *et al.* PTEN, a Putative Protein Tyrosine Phosphatase Gene Mutated in Human Brain, Breast, and Prostate Cancer. *Science* **275**, 1943–1947 (1997). **(Optional)**
Week 3 (January 21)	
	Required Reading
Holiday – No Class!	None!
Discussion 5 – Structure and development of the Prostate	
- What is the structure and function of the androgen receptor? - **What does "hormone responsive" organ mean in the context of the prostate? What are other organs are regulated by hormone levels?** - How does the androgen receptor drive development of the prostate? - What are the different cellular compartments of the prostate? - **How does understanding the development process inform our understanding of prostate cancer?**	*Shang, Y., et al. Formation of the Androgen Receptor Transcription Complex. *Molecular Cell* **9**, 601–610 (2002). *Memarzadeh S, et al. Enhanced paracrine FGF10 expression promotes formation of multifocal prostate adenocarcinoma and increases epithelial androgen receptor. *Cancer Cell*, 12, 572-585. Thomson, A.A., and Cunha, G.R. (1999). Prostatic growth and development are regulated by FGF10. *Development* **126**, 3693–3701. (**Optional)**
Week 4 (January 28)	
Discussion 6 - Genetic events in prostate cancer	Required Reading
- **How can we use profiling of hundreds of samples to provide direction in cancer research?** - **What are the mutations that are commonly associated with prostate cancer?**	*Taylor, B.S., et al. (2010). Integrative Genomic Profiling of Human Prostate Cancer. *Cancer Cell* **18**, 11–22.

Discussion 7 – Genetic events in prostate cancer, cont.	Required Reading
- What is a gene fusion event? - What gene fusions are common in prostate cancer? - **What is the difference between prospective identification and functional interrogation?**	*Zong, Y., et al (2009). ETS family transcription factors collaborate with alternative signaling pathways to induce carcinoma from adult murine prostate cells. *Proceedings of the National Academy of Sciences* **106**, 12465–12470. Tomlins, S.A., et al. (2005). Recurrent Fusion of TMPRSS2 and ETS Transcription Factor Genes in Prostate Cancer. *Science* **310**, 644–648. **(Optional)**
Week 5 (February 4)	
Discussion 8 – Prostate cancer detection and treatment	Required Reading
- How has early detection impacted the survival rate of prostate cancer? - What is a PSA test? Who should get a PSA test? - **What does a PSA test tell us about the status of prostate cancer progression?** - **Are biochemical markers leading to over-diagnosis**?	"Prostate cancer screening: Should you get a PSA test?" Mayo Clinic Staff, Mayo Clinic. May 23, 2012. Ablin, RJ. (2012) The United States Preventative Services Task Force Recommendation against Prostate-Specific Antigen Screening – Point. *Cancer Epidemiol Biomarkers Prev.* 21, 391-394 Catalona, WJ. (2012) The United States Preventative Services Task Force Recommendation against Prostate-Specific Antigen Screening – Counterpoint. *Cancer Epidemiol Biomarkers Prev*. 21, 395-397
Discussion 9 – Detection and treatment, Continued	Required Reading
- **What do we mean by "personalized medicine" and how can we use this to effectively treat patients?** - How can we use high-throughput techniques to generate tumor "signatures" that can inform treatment strategies? - **How can we distinguish between indolent and malignant cancer?**	*Leary, R.J., et al. (2010). Development of Personalized Tumor Biomarkers Using Massively Parallel Sequencing. *Sci Transl Med.* Andriole, G.L., et al. (2009). Mortality Results from a Randomized Prostate-Cancer Screening Trial. *N. Engl. J. Med. 360*, 1310–1319. **(Optional)**
Week 6 (February 11)	
Discussion 10 – Castration Resistance	Required Reading
- What does it mean that the prostate is a hormonally responsive organ? - **Why is castration initially such an effective treatment?** - **<u>Topic selection and outlines due.</u>**	English, H. F., et al. Response of glandular versus basal rat ventral prostatic epithelial cells to androgen withdrawal and replacement. *Prostate* **11**, 229–242 (1987).
Discussion 11 – Castration Resistance, continued	Required Reading
- **What are the mechanisms that drive castration resistance?** - How do mechanisms of castration resistance inform research of novel treatments? - Does "castration resistant" prostate cancer still exhibit hormonal response? - **Are new treatment options actually curing castration resistant prostate cancer?**	Attard, G., *et. al.* Selective blockade of androgenic steroid synthesis by novel lyase inhibitors as a therapeutic strategy for treating metastatic prostate cancer. *BJU International* **96**, 1241–1246 (2005). Locke, J. A., et al. Androgen Levels Increase by Intratumoral De Novo Steroidogenesis During Progression of Castration-Resistant Prostate Cancer. *Cancer Res* **68**, 6407–6415 (2008). Attard, G. *et al.* Selective Inhibition of CYP17 With Abiraterone Acetate Is Highly Active in the Treatment of Castration-Resistant Prostate Cancer. *JCO* **27**, 3742–3748 (2009). **(Optional)**
Week 7 (February 18)	
	Required Reading
Holiday – No class! **Email rough drafts for peer review in next discussion meeting.**	None

Discussion 12 – Research paper peer-review	Required Reading
- **Papers will be handed out anonymously and students will spend the day reading and critiquing their assigned papers.** - **This will give students a chance to experience the peer-review process as well as potentially give them ideas that could help their own papers.**	None
Week 8 (February 25)	
Discussion 13 – Prostate cancer cell of origin studies	Required Reading
- What do we mean by the cell of origin with respect to cancer? - **Why are we interested in identifying the cell of origin?**	*Goldstein, A.S., *et al.* (2010). Identification of a cell of origin for human prostate cancer. *Science* **329**, 568–571. Lawson, D. A. & Witte, O. N. Stem cells in prostate cancer initiation and progression. *Journal of Clinical Investigation* **117**, 2044–2050 (2007). **(Optional-Highly Recommended!)**
Discussion 14 – Cell of origin studies, continued.	Required Reading
- **How do different models provide different answers describing the prostate cancer cell of origin?** - Guest speaker – Dr. Andrew Goldstein	*Choi, N., *et al.* (2012). Adult Murine Prostate Basal and Luminal Cells Are Self-Sustained Lineages that Can Both Serve as Targets for Prostate Cancer Initiation. *Cancer Cell* **21**, 253–265.
Week 9 (March 4)	
Discussion 15 - Chronic Inflammation in prostate cancer	Required Reading
- What is the evidence that chronic inflammation is involved in prostate cancer? - **What is the difference between correlative and functional evidence?**	*Rojas, A., et al (2011). IL-6 promotes prostate tumorigenesis and progression through autocrine cross-activation of IGF-IR. *Oncogene* **30**, 2345–2355. De Marzo, et al. (2007). Inflammation in prostate carcinogenesis. *Nat. Rev. Cancer* **7**, 256–269. **(Optional)**
Discussion 16 - Presentations	Required Reading
	None
Week 10 (March 11)	
Discussion 17 - Presentations	Required Reading
	None
Discussion 18 – Class debate: Will we ever fully treat cancer?	Required Reading
- Additional presentations as necessary. - **Research funding is a finite resource, should we allocate it to cancer treatment options or cancer prevention?**	None

New Course Proposal

	Microbiology, Immunology, & Molecular Genetics 98T Prostate Cancer: Scientific and Social Implications of Aging Society
Course Number	Microbiology, Immunology, & Molecular Genetics 98T
Title	Prostate Cancer: Scientific and Social Implications of Aging Society
Short Title	PROSTATE CANCER
Units	Fixed: 5
Grading Basis	Letter grade only
Instructional Format	Seminar - 3 hours per week
TIE Code	SEMT - Seminar (Topical) [T]
GE Requirement	Yes
Major or Minor Requirement	No
Requisites	Satisfaction of entry-level Writing requirement. Freshmen and sophomores preferred.
Course Description	Seminar, three hours. Enforced requisite: satisfaction of Entry-Level Writing requirement. Freshmen/sophomores preferred. Engagement in active dialogue concerning prostate cancer and medical and social issues it presents, with emphasis on discussion and critical analysis of primary scientific literature and methods pertinent to prostate and general cancer research. Letter grading.
Justification	Part of the series of seminars offered through the Collegium of University Teaching Fellows
Syllabus	File *MIMG 98T syllabus.pdf* was previously uploaded. You may view the file by clicking on the file name.
Supplemental Information	Dr. Owen N. Witte is the faculty mentor for this seminar.
Grading Structure	active participation - 20% foundation papers - 10% seminar synopses - 10% term paper - 40% final presentation - 20%
Effective Date	Winter 2013
Discontinue Date	Summer 1 2013

Instructor	Name	Title
	Daniel Smith	Teaching Fellow

Quarters Taught	☐ Fall	☐ Winter	☐ Spring	☐ Summer
Department	Microbiology, Immunology, & Molecular Genetics			

Contact	Name	E-mail
Routing Help	CATHERINE GENTILE	cgentile@oid.ucla.edu

ROUTING STATUS

Role:	Registrar's Office
Status:	Processing Completed

Role:	Registrar's Publications Office - Hennig, Leann Jean (lhennig@registrar.ucla.edu) - 56704
Status:	Added to SRS on 7/24/2012 10:00:53 AM
Changes:	Title, Description
Comments:	Edited course description into official version; corrected title.

Role:	Registrar's Scheduling Office - Thomson, Douglas N (dthomson@registrar.ucla.edu) - 51441
Status:	Added to SRS on 7/16/2012 12:00:25 PM
Changes:	No Changes Made
Comments:	No Comments

Role:	Registrar's Office - Thomson, Douglas N (dthomson@registrar.ucla.edu) - 51441
Status:	Returned for Additional Info on 7/16/2012 11:59:40 AM
Changes:	No Changes Made
Comments:	No Comments

Role:	Registrar's Office - Thomson, Douglas N (dthomson@registrar.ucla.edu) - 51441
Status:	Returned for Additional Info on 7/16/2012 11:59:40 AM
Changes:	No Changes Made
Comments:	No Comments

Role:	Registrar's Publications Office - Thomson, Douglas N (dthomson@registrar.ucla.edu) - 51441
Status:	Added to SRS on 7/16/2012 11:58:29 AM
Changes:	Title
Comments:	No Comments

Role:	Registrar's Scheduling Office - Bartholomew, Janet Gosser (jbartholomew@registrar.ucla.edu) - 51441
Status:	Added to SRS on 7/16/2012 8:53:15 AM
Changes:	Short Title
Comments:	Added a short title

Role:	L&S FEC Coordinator - Castillo, Myrna Dee Figurac (mcastillo@college.ucla.edu) - 45040
Status:	Returned for Additional Info on 7/13/2012 3:53:43 PM
Changes:	No Changes Made
Comments:	Routing to Doug Thomson in the Registrar's Office

Role:	FEC Chair or Designee - Kaufman, Eleanor K. (eleanork@ucla.edu) - 68155
Status:	Approved on 7/8/2012 1:13:43 AM

Changes:	No Changes Made
Comments:	No Comments

Role:	L&S FEC Coordinator - Castillo, Myrna Dee Figurac (mcastillo@college.ucla.edu) - 45040
Status:	Returned for Additional Info on 6/7/2012 12:18:31 PM
Changes:	No Changes Made
Comments:	Routing to Eleanor Kaufman for FEC approval

Role:	CUTF Coordinator - Gentile, Catherine (cgentile@oid.ucla.edu) - 68998
Status:	Approved on 5/21/2012 11:59:31 AM
Changes:	No Changes Made
Comments:	on behalf of Professor Kathleen L. Komar, chair, Collegium of University Teaching Fellows Program

Role:	Initiator/Submitter - Gentile, Catherine (cgentile@oid.ucla.edu) - 68998
Status:	Submitted on 5/21/2012 11:57:53 AM
Comments:	Initiated a New Course Proposal

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Comments or questions? Contact the Registrar's Office at
cims@registrar.ucla.edu or (310) 206-7045