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**PM529 – ENVIRONMENTAL HEALTH, AN EPIDEMIOLOGIC APPROACH
(SPRING SEMESTER, 2018)**

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PM529 Lectures: Thursday 5:00 to 8:30pm
Health Science Campus (HSC) SSB 114

Office hours: Meeting times available by appointment

Course Description

This course will help students develop a broad understanding of environmental health. The format includes lectures, case studies and critique of literature conducted as group exercises, and various media. An introductory overview of the principles of epidemiology, exposure assessment and toxicology will be provided within the context of specific hazards considered in the course. Exposure pathways will be reviewed, focusing on the role of air as a route of exposure. Environmental illness associated with selected exposures, including common air pollutants, heavy metals, persistent organic pollutants, pesticides, environmental endocrine disruptors, and radiation and other environmental carcinogens will be reviewed. These topics have been selected to illustrate the application of epidemiologic methods to environmental outbreak evaluation and management, to screening for environmental illness, and to evaluation of current controversies regarding the true health risks of environmental hazards. Students will learn the accepted approaches to management of known environmental hazards, such as lead, that should be part of any comprehensive public health program. There will be a review of anthropogenic climate change associated with greenhouse gases, as illustrative of newly recognized environmental hazards that have largely unknown but potentially catastrophic long term consequences for public health. The course will also introduce students to the tools for managing environmental health risks, including the use of risk assessment, the —precautionary principle, regulatory and legal instruments.

Historical case studies will be used to highlight significant environmental events, to motivate discussions of identifiable measures that might have been used to address the health and safety issues encountered in the respective events, and to craft appropriate strategies for addressing present and future environmental health events. Students will learn to critically review environmental hazards, identify concerns for follow-up, and propose a range of approaches to protect public health and safety in a reasonable manner that can be placed into operation.

An emphasis will be placed on classroom participation and student engagement in discussions, presentations, and investigations to maximize the opportunities for insights, education, and action to improve working conditions in a broad range of occupations both visible and invisible to the everyday citizen.

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Learning Objectives

- 1) Develop an understanding of the basic principles of epidemiology, toxicology, exposure assessment, using examples from students' personal and extended experiences, as well as historical events;
- 2) Develop an understanding of challenges faced by individuals and community groups in evaluating environmental environments to assess workplace health and safety issues;
- 3) Become proficient in using library, electronic, and social media to research environmental health resources, retrieve information on environmental health concerns, and critically and objectively review the quality of presented materials;
- 4) Apply objective scientific approaches to the evaluation of environmental health concerns in order to responsibly assess issues and propose applicable solutions.
- 5) Develop the understanding and skills needed to craft an effective workplace plan that can be applied to benefit both employees and employers in the workplace.

Class Requirements and Format

Students will complete assigned readings for each class and come prepared to actively participate in wide-ranging discussions of topics developed in the preparatory materials. The class will be presented in live-lecture format by the course instructor, with occasional guest lecturers who will provide added expertise in specific topic areas. Students will share environmental-health-themed issues through regular presentations in each class meeting. In-class discussions will supplement the readings and relate textbook presentations to life activities.

Presentations of approximately 120 minutes in length by course instructor or guest lecturer will be preceded with a 15-20 minute group discussion of assigned reading materials typically covering current events/published peer-reviewed articles. Starting on Week 3, lectures will be followed by 2-3 student presentations, each approximately 25 minutes with 5 minutes Q & A.

Student presentations will focus on an environmental health topic recently in the news and selected by the respective student. Presentations will include a brief description of the issues raised by the article, a discussion of the population at risk, and potential solutions or mitigation strategies to the identified problem. This will be followed by a brief interactive classroom discussion moderated by the student presenter. On the day of each presentation, student presenters will also be required to submit a written/electronic copy of their presentation, which will document their presentation, including providing references for the resources used to develop the presentation. Class presentations may be made using Powerpoint, Prezi, video, social media, or any comparable audiovisual interactive activity. A copy of audio-visual presentations is to be submitted to the course instructor.

The class presentation will inform, educate, and engage classroom peers in the issues, status, affected population, alternative solutions, and potential resolution of the identified occupational health challenge. In general, each project report will contain a literature review of available information to frame the matter being presented, a clear and concise presentation of the issue, an assessment about the size and/or nature of the affected population, a critical review of possible alternative responses, a recommendation for action, and an informed estimation of possible outcomes. Student project presentations will be followed by a question-and-answer period with the class and instructor, to clarify presented issues and assess understanding of the topics covered.

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Occasional quizzes on course material and homework assignment reviews will also be a part of in-class activities. Recommended readings, video clips, and supporting materials for each lecture topic are provided in the course lecture schedule, and will provide a background for instructors' course lectures. Additional materials may also be identified/distributed in class.

The PM529 course textbook will be Frumkin, H. (Editor), Environmental Health – From Global to Local, (Third Edition), ISBN 978-1-118-984476-5, Copyright 2016, Jossey-Bass, A Wiley Brand. While this will be the basic course reference, other reading materials will also be assigned.

Attendance Policy: Students are expected to attend every class and stay for the duration of the class. Failure to attend class, arriving late, or lack of active participation may impact the ability to achieve course objectives which could affect course grades.

University of Southern California policy permits students to be excused from class, without penalty, for the observance of religious holy days. This policy also covers scheduled final examinations which conflict with students' observance of a holy day. Students must make arrangements in advance to complete class work which will be missed, or to reschedule an examination, due to holy days observance. Please refer to *Scampus* on attendance policies. In consideration of classmates and the instructor, students are asked to keep external distractions that might interfere with class to a minimum.

Course Grades: Students' course performance will be evaluated on the basis of in-class quizzes [30 points], assigned homework exercises [30 points], oral classroom presentations [40 points], a midterm examination [100 points], and a final examination [100 points]. Student presentations will be the focus of class meetings in the final few weeks of the semester. Specific project format and details will be provided in class during the semester.

Final grades for the course will be based on the following scale:

A+	97-100	B+	87-89	C+	77-79	D	60-69
A	93-96	B	83-86	C	73-76	F	0-59
A-	90-92	B-	80-82	C-	70-72		

Please note that an A+ carries the same weight (4.0) as an A.

Course Readings and Class Preparation Assignments will include assigned readings from the course text, additional specific readings from the worldwide web, and short videos from various websites. These will be provided in the Course Lesson Plan, which will be posted prior to the semester but may be periodically updated.

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Late or Make-Up Work will be accepted if and only if an extension request has been made of the Instructor and if that request has been approved. Otherwise, papers, homework and quizzes are due on the day and time specified. Extensions will be granted only for extenuating circumstances. If the submission is late without permission, the grade will be affected.

Classroom Distractions that disrupt or detract from both the learning environment and from making the best use of limited class time together are to be discouraged. Do not take class time to peruse the student newspaper or do homework from other classes. Cell phones/pagers/loud electronic devices should be turned off, or set to “vibrate”, during class time. Electronic devices (laptops, tablets, iPads, etc.) may be used to take notes during class, at the discretion of the instructor. Failure to comply with these simple and basic rules of classroom etiquette will adversely affect semester course grades.

Changes to the Course Lectures Plan may be necessary during the semester, based on the progress of course activities, or due to unforeseen or extenuating circumstances. Every effort will be made to provide adequate advance notification if and as there are any changes made.

University Policy for Students with Disabilities includes a requirement to register each semester for academic accommodations based on a disability with Disability Services and Programs (DSP). A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the course instructor 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.

Academic Integrity is a fundamental cornerstone of the university experience. 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://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. 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/>.

Complaints or concerns about the course or the instructor can and should be aired, discussed, and resolved. Please discuss any concerns with the course instructor. If you feel that you cannot discuss it with the instructor, contact your advisor and/or the Associate Dean for Student Affairs for further guidance.

Course Lectures and Readings: (See attached table)

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Week	Lecture	Date	Topic	Speaker	Readings/Videos
1	1	11 Jan	Introduction / Overview	Gibson	<p>Frumkin (Course Text): Chapter 1, Introduction to Environmental Health</p> <p>Bell M.L., Davis D.L. (2001). Reassessment of the lethal London fog of 1952. Novel indicators of acute and chronic consequences of acute exposure to air pollution.</p> <p>https://www.youtube.com/watch?v=U4zc5l3wmM</p>
2	2	18 Jan	Epidemiology Review; Recognizing & Preventing Hazards	Gibson	<p>Frumkin (Course Text): Chapter 4, Environmental and Occupational Epidemiology</p> <p>Grandjean P. (2008) Seven deadly sins of environmental epidemiology and the virtues of precaution. <i>Epidemiology</i>. 19(1) 158-162.</p>
3	3	25 Jan	Risk: How to Evaluate Risk; How to conduct Risk Assessments; Risk Comm. & Information Dissemination	Gibson Student Presentations	<p>Frumkin (Course Text): Chapters 26, 27, 28</p> <p>Freudenberg WR (1988). Perceived Risk, Real Risk: Social Science and the Art of Probabilistic Risk Assessment. <i>Science</i>. Vol 242. No. 4875. 44-49.</p> <p>(General Communication) http://www.ted.com/talks/melissa_marshall_talk_nerdy_to_me.html</p>
4	4	01 Feb	Toxicology	Gibson Student Presentations	<p>Frumkin (Course Text): Chapter 6, Toxicology</p> <p>Maxwell JC (2011). The prescription drug epidemic in the United States: A perfect storm. <i>Drug and Alcohol Review</i>. 30, 264-270</p> <p>Theoharides TC (1997). Sudden Death of a Healthy College Student Related to Ephedrine Toxicity From a Ma Huang-Containing Drink. <i>Vol 17(5)</i>, 437-439</p> <p>https://www.ted.com/talks/tyrone_hayes_penelope_jagessar_chaffer_the_toxic_baby</p>

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5	5	08 Feb	Chemical, Biological & Radiological Hazards	D. Webber, D. Willes, G. Wong	Frumkin (Course text) Chapter 17, Solid and Hazardous Waste; Chapter 22, Radiation Fisher NS et al. (2013) Evaluation of radiation doses and associated risk from the Fukushima nuclear accident to marine biota and human consumers of seafood. PNAS. Vol 110 (26), 10670-10675
6	6	15 Feb	Health Effects of Air Pollution	Gibson Student Presentations	Frumkin (Course Text): Chapter 13, Air Pollution Nel A (2005). Air Pollution – Related Illness: Effects of Particles. Science. Vol 308, 804-806.

7	7	22 Feb	Food and Water Health and Safety	Gibson Student Presentations	Frumkin (Course Text): Chapter 16, Water and Health; Chapter 19, Food Systems, The Environment, and Public Health Hutin Y. (1999). A Multistate, Foodborne Outbreak of Hepatitis A. NEJM. 340(8), 595-602
8	8	01 Mar	Exposure Assessment; Fate and Transport	Gibson Student Presentations	Frumkin (Course Text): Chapter 8, Exposure Science, Industrial Hygiene, and Exposure Assessment Prezant DJ (2002). Cough and Bronchial Responsiveness in Firefighters at the World Trade Center Site. NEJM, Vol 347, No 11, 806-815.
9		08 Mar	Mid-term Exam		
10		15 Mar	Spring Break		Spring Break
11	9	22 Mar	Infectious Disease	Gibson Student Presentations	Frumkin (Course Text): Chapter 18, Pest Control and Pesticides Shurman EK (2010). Global Climate Change and Infectious Disease. NEJM 362(12), 1061-1063 https://www.ted.com/talks/hadyn_parry_re_engineering_mosquitos_to_fight_disease
12	10	29 Mar	OSHA, Workplace Safety, and Injury Prevention	Gibson Student Presentations	Frumkin (Course Text): Chapter 21, Work, Health and Well-Being; Chapter 23, Injuries Thompson RC et al. 1998. Where the Safety Rubber Meets the Shop Floor: A Confirmatory Model of Management Influence on Workplace Safety. Journal of Safety Research, 29(1), 15-24.

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13	11	05 Apr	The Built Environment	Gibson Student Presentations	Frumkin (Course Text): Chapter 20, Buildings and Health Berrigan D et al. (2008). Built Environment and Health. Prev Med 47(3), 239-240. https://www.ted.com/talks/michael_murphy_architecture_that_s_built_to_heal
14	12	12 Apr	Climate Change; Environmental Disasters	Gibson Student Presentations	Frumkin (Course Text): Chapter 12, Climate Change and Human Health; Chapter 24, Environmental Disasters Rosenzweig C et al. (2010). Cities lead the way in climate-change action. Nature 467, 909-911 http://channel.nationalgeographic.com/explorer/videos/can-we-fix-climate-change/ https://www.ted.com/talks/al_gore_the_case_for_optimism_on_climate_change
15	13	19 Apr	Student Presentations	Student Presentations	
16	14	26 Apr	Student Presentations	Student Presentations	
17		03 May	Final Exam		Thursday, May 3 from 4:30-6:30 pm