HONORS 222C, Spring 2016
PAIN

Drs. Loeser and Mayer
Wednesdays, 1:30-4:20 with a 15 minute break approximately halfway through.
Room: MGH 074

FACULTY:

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DESCRIPTION:

Pain presents a challenge as a problem in science, as a problem in health policy and patient treatment, and as a problem in understanding deeper human experiences. Pain is a universal experience. While all of us have experienced acute pain following surgery or an injury, not all of us have experienced chronic pain, which is pain that persists after tissue healing has occurred, usually > 3 months after injury. In this seminar course, we will explore pain from multiple perspectives. Some of these include the physiology, pathophysiology, psychology and sociology of pain, the epidemiology of and risk factors for pain and disability, and the subjective experience of pain. Readings, short lectures, and discussions will address the "sciences" of pain, health care for pain, the expression of pain in literature, philosophic aspects of pain, and social science/anthropologic analyses of pain and its role in different cultures.

Students will be evaluated on the basis of a term paper on a topic of interest to the student (after discussion with one of the instructors), weekly "thought" pieces based upon the week's suggested readings and on line materials, and class participation. We encourage students to learn outside of their usual areas—to open themselves to new approaches and new ways of thinking. We encourage science students to explore the humanities, and for social science and humanities students to explore biological and medical science. Just as most social problems—and the understanding of pain—require specialists, so too do they benefit from generalists, and people able and willing to think in many dimensions.

We encourage students from any discipline to enroll in the course. It is specifically designed to incorporate multidisciplinary perspectives, and presupposes only a general education and inquisitiveness.

Portfolio Contribution: Term paper and collated weekly writing.

The class will meet for three hours, on Wednesdays from 1:30 until 4:20 pm during the Spring Quarter of 2016. Students will be provided with a reading list for each session; it is our expectation that every student will read some of the suggested materials prior to the class and be able to enter into a discussion of the day's topic. Lectures by the faculty will be kept to a minimum; the class time will be spent discussing the topic and the readings. We expect each student to turn in at the beginning of each class meeting a 1-2 page brief review of the readings that the student has undertaken for that session. Each student will be required to write a term paper of 10-20 pages length on a topic of his/her choice related to pain. Discussion of the proposed topic with one of the faculty prior to writing is strongly suggested. There will be no final examination. The grade will be based upon class participation (50%) and the term paper (50%). Class participation will be assessed on the basis of written 1-2 page "thought pieces" each week, and active discussion of their thought pieces, and the weekly readings.

How to approach the readings:

We will use CommonView—one of the Catalyst tools—for the readings. These will be posted at the beginning of the quarter.

We realize that you may be unable to do all of the suggested reading for any given week. You should consider the readings to be resources for you—a basis for exploration of the topic. We suggest that you read further in an area that interests you for any given session. The exploration may not be more reading—it may just consist of thinking. There are no quizzes, nor will anybody be placed on the spot and questioned about the material. Be selective. Read what looks interesting to you. There may be some weeks when you are motivated to do all of the reading. There may be other weeks when you feel like doing some literature (or video) searches based on the topic of the week. Some weeks you may only be able to complete a couple of the articles. Remember that there is no exam in this course, nor is there any memorization that is necessary. At the same time, this flexibility is not an invitation to do little work. We expect you to be active in your reading, writing, thinking, and participation in this seminar. We hope that the thought pieces will serve as a tool for your own exploration of pain. Please note, though, that we will notice if you seem consistently to be doing the minimum. As honors students, we hope that this will not be a problem for any of you.

Description of "Thought Pieces:"

These will be 1-2 page, double spaced, 12 pt , brief discussions of some aspect of the readings (or videos) for that week. Thought pieces may also be based on other relevant material that you have come across. You have considerable freedom in defining each one of these pieces for yourselves. You might ask yourself: what theme is particularly intriguing to me? Why is it interesting? What is **my** perspective on this theme or issue? The latter must be based upon sound analysis and the use of evidence. Thought papers will be reviewed, commented upon and returned to their authors at the subsequent seminar session. They will not be graded.

All written work in this course will be assessed on the basis of standard criteria. These include, but are not limited to, quality of writing, organization, use of evidence, and analysis.

Description of term papers:

Term papers can be on any subject or theme related to this course. You must consult one of the two faculty members for approval of your term paper topic. We urge you to be analytical in your approach. In other words, your papers should not just be literature reviews. “Smith said this, Mayer said that, and Loeser said this” is usually boring to read and boring to write. This is not to say that reviewing the relevant literature (or ideas) is not important. Rather, you must go further than that. What is the evolution of ideas? Of scientific thought? What ideas are in mutual contradiction, and what is the nature of the tension and contradictions of these ideas? Do not be afraid to be controversial, and to challenge existing ways of thinking—as long as you use evidence and analysis.

In writing your papers, please do not forget the thousands of relevant books. JDM has observed that there is an increasing tendency to use only e-journals in undergraduate papers. This sets artificial limits on the range, and type, of thought that is accessible.

Papers are to be 10-20 pages long, double-spaced, 12 point font, not including references. You may use any **standard** citation style that you wish. It must be standard, and must be consistent throughout your paper. See the following helpful webpage for a list of standard styles:

http://guides.lib.washington.edu/citations

UW standards will be adhered to strictly in this seminar. There are to be no violations of the UW policies on academic conduct. While each term paper must be your own work; however, there is nothing wrong with speaking with other people while developing your ideas. For further information, see the UW policy on academic responsibility at:

http://depts.washington.edu/grading/pdf/AcademicResponsibility.pdf

Readings: Required readings for the week, plus, in some cases, optional readings, will be placed in CommonView. The readings in this list may be changed somewhat as we proceed through the seminar, because of themes that arose the previous week, because of readings that you may want to share with the class, and because we want to have some of the most recent scientific literature available—in some cases, articles that may have appeared within days of the class.

BACKGROUND REFERENCE MATERIALS FOR ENTIRE COURSE

Fields H. Pain. New York, McGraw Hill, 1987. A good basic text by one of the pioneers.

IASP Pain Terms (in Shared Space) or IASP web site

Loeser JD: (Ed) Bonica's Management of Pain, 3rd ed. Philadelphia, Lippincott, Williams & Wilkins. 2000. One of the authoritative and complete medical textbooks on pain. Thousands of pages long.

Rey R. History of Pain. Paris, Ladecouverte, 1993. From the beginnings of time to the present.

SESSION 1 MARCH 30

By this first session, students will be expected to have completed the appropriate readings placed in CommonView. Students will also be expected to have completed their first short “thought piece”, which they should bring and turn in at the start of this first class.

INTRODUCTION TO PAIN

The Institute of Medicine (2011) identified chronic pain as a U.S. societal problem of enormous impact. It affects about 100 million adults, with an estimated annual cost of $635 billion, including direct medical expenditures and loss of work productivity. Low back pain is the 3rd most common cause of disability throughout the world. Acute pain is also a major health care issue, and is related to trauma and surgery. Pain is not only a medical issue; it has bedeviled philosophers, writers, and, recently, politicians as well. One of the problems that has only recently been addressed is the prevalence and incidence of pain in the U.S. and in the world's population. This is the subject of epidemiology, which is the specialty of one of the faculty for this course. We will consider a variety of epidemiologic issues about pain, as well as its biology and psychology and sociology. Pain has also been a subject for artists and writers, both of fiction and purported fact and we will explore this aspect of our topic as well. Pain is a universal human experience that involves much more than the response to tissue damage. We will begin by discussing the various types of pain and their significance to health care providers and patients alike.

Selected Readings for First Seminar Meeting:

Pizzo PA, Clark NM, Carter-Pokras NM, et al. Relieving pain in America: A blueprint for transforming prevention, care, education, and research. Committee on Advancing Pain Research, Care, and Education, Institute of Medicine. Washington, D.C., National Academies Press, 2011. The Institute of Medicine report on pain in the U.S. and what to do about it (without indicating how to fund its recommendations). NOTE: WE SUGGEST THAT YOU READ THE SUMMARY (PP. 1-18) for the first class. Should you wish to read more, this is a definitive work on pain that is having much influence in health care today.

Loeser, John D. What is Chronic Pain? Theoretical Medicine 1991;12: 214-215. Discussion of chronic pain as a medical problem.

Videos:

These are all excellent and authoritative brief videos that begin with the basics. We recommend them highly, and hope that you will have the opportunity to watch several (or all) before the first class—or, at least, sometime during the course.

Pain. Is it all just in your mind? Professor Lorimer Moseley
http://www.youtube.com/watch?v=- 3NmTE-fJSo

Alan Basbaum
http://www.youtube.com/watch?v=gQS0tdIbJ0w

The Secret World of Pain. BBC Horizon.
http://rutube.ru/video/547183a7a629d11e3563f0eab2cd7406/

Understanding **Pain**: What to do about it in less than **five minutes**?
www.youtube.com/watch?v=4b8oB757DKc

SESSION 2 APRIL 6

BIOLOGY OF PAIN

This session will focus upon the anatomy, physiology, and psychology of pain, as well as critical theories of pain, such as the Gate Control Theory, doctrine of specific energies, pattern theory, and current concepts of modulation of sensory and affective events.

Selected Readings:

Melzack R and Wall PD. The Challenge of Pain. London, Penguin Books, 2008. Small paperback review of anatomy, physiology and psychology of pain by two of the pioneers of the pain movement.

Butler D, and Moseley L. Explain Pain. Adelaide, Noigroup Publications, 2003. Revised in 2013. An illustrated and amusing text that covers the basics.

Melzack R and Wall PD. Pain mechanisms: a new theory. Science 1965;150: 971-979. The original publication of an innovative idea about pain mechanisms (Gate Control Theory)

Loeser, J.D. A History of Pain Concepts. Powerpoint 2012. In CommonView

SESSION 3 APRIL 13

PAINS WITHOUT PERIPHERAL PATHOLOGY

This session will focus upon the all-too-common clinical problems of patients with chronic pain who do not have a detectable peripheral cause for their pain. Examples include such diverse conditions as phantom limb pain, tic douloureux, pain after brain stroke, and postherpetic neuralgia. These pains, often labeled "neuropathic" are believed to be due to dysfunction within the peripheral or central nervous system; they may tell us something about the mechanisms underlying both pain and human behavior in general. Other examples of what are called "neuropathic pains" include complex regional pain syndrome, fibromyalgia, irritable bowel syndrome, post-surgical pains and many others. All too often, patients are blamed for these types of pain that have no external cause visible to the physician.

Selected Readings:

Pages 61-77 in Melzack and Wall, The Challenge of Pain. Brief review of some neuropathic pains.

Boivie, J. Central Pain. IN: The Paths of Pain 1975-2005. Seattle, IASP Press, 2005. Pages 299-312.

Torrance, N, Smith BH, Bennett M, Lee AJ. The epidemiology of chronic pain of predominantly neuropathic origin. Results from a general population survey. J Pain 2006;7:281-289.

SESSION 4 APRIL 20

COMMON CLINICAL PROBLEMS WITH PAIN

We will discuss common clinical pain syndromes that have a huge impact upon personal and social health, including headaches, low back pain, and cancer pain.

Activity-limiting low back pain (LBP) has a world-wide lifetime prevalence of about 39% and a similar annual prevalence of 38%.[2] It occurs in adolescence through the elderly. The majority of people having LBP experience recurrent episodes.[3] The use of all interventions, including surgery, pharmacological, and non-pharmacological approaches, for treatment of chronic LBP (cLBP) has increased from 1995 – 2010, but despite increased utilization, the prevalence of symptoms, expenditures and disability has continued to increase.[4-6]

Although LBP is a symptom, there is now growing evidence that cLBP, like other chronic pain conditions,[7] can progress beyond a symptomatic state to a complex condition unto itself. This includes persistent anatomical and functional changes in the central nervous system[8-10], as well as changes in the back (e.g., degenerative spinal changes, atrophy and/or asymmetry of paraspinal muscles).[11-13] Although some patients with cLBP have clear pathoanatomic etiologies, for most individuals there is no clear association between their pain and identifiable pathology of the spine and its associated soft tissues (i.e., intervertebral discs, ligaments, joint capsules, and muscles).[14] Furthermore, we often cannot identify mechanisms to account for the appreciable negative impact cLBP has on the lives of many cLBP sufferers.[15] Such cLBP is often termed non-specific, idiopathic, mechanical, or due to instability, and may in fact be due to different and multiple biologic and behavioral etiologies in different individuals.[16]

A range of different classes of interventions have been applied to adults with cLBP. These include spine surgery, injections into all the structures of the back, FDA-approved pharmacological regimens, psychological interventions (e.g., cognitive behavioral treatment), manual therapies (e.g., spinal manipulation/mobilization, massage), exercise, acupuncture, nutritional supplements (e.g., glucosamine, herbs) and lifestyle adjustment and self-management approaches.[17-20] Many of these interventions have shown some clinical benefit, but few appear to consistently provide substantial, long-term reductions in pain with increased function.[17-20] An industry has sprung up in the U.S. treating LBP, with vast sums of money purchasing few things shown to be beneficial to the sufferer. In this session we will also discuss the placebo response or non- specific treatment effects. This ubiquitous human phenomenon confounds patient and physician reports of treatment efficacy. Many studies of placebo responses have given us insight into the factors that play a role in its generation.

Selected Readings:

Waddell, G. Aylward M., Sawney P. Back pain, incapacity for work and social security benefits: an international review and analysis. London, Royal Society of Medicine Press, 2002. Exhaustive review of disability and its remediation.

Cherkin DC, Deyo RA, Loeser JD, Bush T, Waddell G: An international comparison of back surgery rates. Spine. 1994; 19:1201-1206. Far too much surgery in U.S.

Nachemson A, Jonsson, E. Neck and Back Pain. Philadelphia, Lippincott, 2000. A masterful text on spine pains and their treatment.

Turner JA, Deyo RA, Loeser JD, Von Korf M, Fordyce WE: The importance of placebo effects in pain treatment and research. JAMA. 1994, 271: 1609-1614. A reminder for all to consider non-specific treatment effects.

Kaptchuk TJ, and Miller FG. Placebo effects in medicine. N EngJ Med. 2015;373:8-9.

SESSION 5 APRIL 27

MEDICATIONS AND PAIN

GUEST FACULTY: David Tauben, MD. Clinical Associate Professor, Medicine, Director UW Center for Pain Relief, Anesthesia & Pain Medicine

This session will focus upon the drugs used to treat acute and chronic pain, their mechanisms of action and their clinical utility and their risks. The major contemporary problems with opioids and cannabinoids will be presented from the patient's and the physician's point of view. Opioids, NSAIDS, antidepressants, anti-epileptics, and cannabinoids will be discussed, as will issues with opioids in the developed world. What one can legally put in one's mouth is a function of the whims of those who pass laws and not of medical science. Although drugs are the most frequent treatments of chronic pain, they are often not the best treatment.

Selected Readings:

Dennis C. Turk, Hillary D. Wilson, Alex Cahana. Treatment of non-cancer pain. Lancet 377 (2011) 2226-2235.

Blanco C, Hasin DS, Wall MW, et al. Cannabis Use and Risk of Psychiatric Disorders Prospective Evidence From a US National Longitudinal Study. JAMA Psychiatry. doi:10.1001/jamapsychiatry.2015.3229. Published online February 17, 2016.

Dale R, Stacey B. Multimodal Treatment of Chronic Pain. Med Clin N Am 100 (2016) 55–64.

Yunus MB. Fibromyalgia and Overlapping Disorders: The Unifying Concept of Central Sensitivity Syndromes. 0049-0172/07/$-see front matter © 2007 Elsevier Inc 339
doi:10.1016/j.semarthrit.2006.12.009

SESSION 6 MAY 4

EPIDEMIOLOGY AND THE STUDY OF PAIN

Epidemiology is typically defined as the study of disease in populations. In descriptive epidemiology, the concern is answering the "who, where, when, and what" of disease. In analytic epidemiology, the focus shifts to the "why," and the "how." Typically, there is a heavy emphasis on methodology: how does one study these questions in a manner that reflects the unbiased and objective understanding of reality. In this session, we explore the epidemiology of chronic pain. How common is it in different populations? What are the characteristics of those who experience pain? How does the distribution of chronic pain vary among groups such as 1) different ethnic groups; 2) age groups; 3) locations; 5) sexes; and 6) cultures? We will examine and critique a study of the distribution of pain in the US.

In clinical epidemiology, the focus shifts to the determinants of disease in groups under treatment. A special type of group that one considers is how the severity disease differs in groups who receive treatment, including the randomized controlled trial, in which one compares groups who receive a given treatment, and groups who receive no treatment, but rather "dummy treatment": the placebo, which is frequently referred to as a "sugar pill." This is the only way in which the efficacy of treatment can be assessed, and is termed a *randomized controlled trial*. We will examine and critique study in which an active treatment of pain is compared with placebo.

One of the major problems in all of these types of studies is that of bias. Does the study reflect the population as a whole? If one is interested in studying the frequency of chronic pain in the student population, it would be erroneous to generalize from studying pain in this particular seminar, or a sample of students who are walking across the quad at 11 am on Monday, or a group of students who are in the library or the lab on Tuesdays. We will discuss the major types of bias, and ways in which bias may be minimized, or eliminated, and we will examine one randomized trial of pain treatment in which bias is a major problem, and assess the degree to which the findings are valid.

Selected Readings:

Sharon Schwartz and Ezra Susser. "Study Designs", chapter. 6, pp. 53-61 in: Ezra Susser et al., Psychiatric Epidemiology: Searching for the Causes of Mental Disorders. Oxford: Oxford University Press, 2006

Noel S. Weiss, "Therapeutic Efficacy: Randomized Controlled Trials." Pp. 46-82 in: Noel S. Weiss, Clinical Epidemiology: The Study of the Outcome of Illness, 3rd edition. Oxford: Oxford University Press, 2006.

Carolyn Masters Williams and Kenrad E. Nelson, "Study Design",pp. 51-96. In: Kenrad E. N elson et al., Infectious Disease Epidemiology: Theory and Practice. Aspen Publishers, 2001.

Lorene M. Nelson, "Study Design, Measures of Effect, and Sources of Bias," pp. 23-54 in Lorene M. Nelson et al., Neuroepidemiology: From Principles to Practice. Oxford: Oxford University Press, 2004

SESSION 7 MAY 11

PAIN AND LITERATURE

Many great and many more not so great works of autobiography and fiction have been centered upon pain and its effects upon human behavior and emotion. Pain is often associated with death and dying, but we wish to focus upon pain and not end of life issues. Two contemporary works that deal directly with chronic pain are: Roth's Anatomy Lesson, and Reynolds Price's A Whole New Life: An Illness and a Healing. Roth describes a fictional man suffering from chronic pain, while Reynolds Price relates his own experiences with a spinal cord tumor and pain.
Students are required to read one of these two, but if you have another favorite that deals with issues of chronic pain, please discuss this with one of the faculty to obtain permission to use another source for our seminar discussions.

REQUIRED Readings: (one of these is required for this session)

Price, R. A Whole New Life: An Illness and Healing. New York, Atheneum, 1994

Roth, P. The Anatomy Lesson. New York, Farrar, Straus & Giroux, 1983.

SESSION 8 MAY 18

SOCIAL CONTEXT AND PAIN

Pain, although perceived only by an individual, has deep sociological implications. People are taught how to respond to pain and other stressors by their culture. Culture is about values, ideas, traditions, language, customs, learned behaviors, symbolic materials such as arts and music, and other nonbiological inheritances. Pain and suffering are part of a culture and are influenced by multiple aspects of a culture. In this session we will look at the interactions between pain and culture. In addition, the meanings of pain are culturally determined. This session will explore the social, rather than the individual aspects of pain. Social policies dealing with health care and wage replacement for those with pain will be discussed.

Selected Readings:

Morris, David B. The Culture of Pain. Berkeley, University of California Press, 1991.
Pain in its social context by a very well informed English professor who has written broad interpretations of health, disease, and pain.

Morris DM. Illness and Culture. Berkeley, University of California Press, 1998. Contains a chapter on pain similar to prior Morris reference. Pp. 107-134.

Loeser JD: Pain and Suffering. The Clinical Journal of Pain, 2000, 16:S2-S6.

Loeser JD: Socioeconomic Factors in Pain and its Management, in Cousins MJ, Bridenbaugh PO, Carr DB, Horlocker T (eds): Cousins and Bridenbaugh's Neural Blockade in Clinical Anesthesia and Management of Pain. *4th edition.* Philadelphia, PA, Lippincott, Williams and Wilkins, 2009, Chapter 29; pp 644-650.

Loeser JD, Sullivan M.: Disability in the chronic pain patient may be iatrogenic. Pain Forum 4:114-121, 1995.

Good M-J D, Brodwin PE, Good BJ, Kleinman A. Pain as Human Experience: An Anthropological Approach. Berkeley, University of California Press, 1992.

Wailoo, K. Pain: A Political History. Baltimore, Johns Hopkins Press, 2014.

SESSION 9 MAY 25

PHILOSOPHY AND PAIN

GUEST FACULTY: Mark Sullivan, PhD, MD. Dr. Sullivan has a PhD in Philosophy, and his post-MD residency was in psychiatry. He is Professor of Psychiatry and Behavioral Sciences, and Adjunct Professor of Bioethics and Medical Humanities.

In this session, we will discuss two broad topics: philosophical issues in the definition of pain and how to deal with the epidemic of opioid abuse and deaths in the United States. What does it mean when an neuroscientist states that a fMRI scan can show pain? Does pain reside in an organ in the body or is it a phenomenon of the entire person and not one of his/her parts? Epidemiologic data from our stste and from the country reveal the magnitude of the prescription opioid disaster that has afflicted our country. It has clearly led to an amplification of the heroin problem. More people now die of opioid overdose than automobile carnage. What can be done and at what cost to ameliorate this problem?

Selected Readings:

Lewis CS. The Problem of Pain. 1940 (Many subsequent reprintings, both hardcover and paperback). An attempt to explain why people suffer from pain.

Sullivan MD, Cahana A, Derbyshire S, Loeser JD. What does it mean to call chronic pain a

brain disease? (Editorial). The Journal of Pain. 2013;14(4), pp317-22.

Sullivan MD, Cahana A, Derbyshire S, Loeser JD. Reply to Commentaries: What does it mean to call chronic pain a brain disease? (Editorial). The Journal of Pain. 2013;14(4), pp336-337.

Sullivan MD and Howe CQ "Opioid therapy for chronic pain in the United States: Promises and Perils. Pain 154 (2013) S94-S100.

Ballantyne JD and Fleisher LD. Ethical issues in opioid prescribing for chronic pain. Pain 148 (2010) 365-367.

SESSION 10 JUNE 1

THE PAIN MOVEMENT: HISTORY AND FUTURE DIRECTIONS

Concepts of pain can be found in the literature and science of Ancient, Medieval, Renaissance, Industrial, Modern, and Post-modern societies. Cross-cultural studies of pain and the anthropology of pain have been undertaken for over 20 years. Pain is not just a medical problem; it is inherent in many social interactions and has been used by governments and other organizations to influence human behavior. Health care providers deal with pain in a variety of ways based upon the social conventions that surround them. Many other members of society also deal with pain and suffering in a non-medical setting. Meaning is fundamental to the experience of pain and culture has a powerful influence on the experience of pain.

Selected Readings:

Carr, DB, Loeser, JD and Morris DB. (eds.) Narrative, Pain and Suffering. Seattle, IASP Press, 2005. A collection of essays on pain and narrative written from a wide array of viewpoints.

Loeser JD: Basic Consideration of Pain: History of Pain Concepts and Therapies. In: Bonica's Management of Pain, 3rd Ed. Edited by Loeser JD, Philadelphia, Lippincott, 2000, Chapter 1, 3-16.

Loeser JD, Cahana A. Pain medicine versus pain management: ethical dilemmas created by contemporary medicine and business. Clin J Pain, 2013;29(4):311-316.

OTHER RESOURCES FOR ALL SESSIONS AND TERM PAPER:

Some suggested journals (all in UW e-journal collection). In addition, consult major journals such as the New England Journal of Medicine, Lancet, BMJ (British Medical Journal), JAMA, Annals of Internal Medicine, Archives of Internal Medicine, Pain, Journal of Pain, Clinical Journal of Pain, Anesthesiology, Social Science and Medicine, Health and Place.