**University of Pennsylvania School of Nursing, School of Dental Medicine and Perelman School of Medicine Interprofessional Pain Course**

**Course Syllabus**

**Title:** **NURS 536:** **Pain Science and Practice**

**MED 536: Pain Science and Practice**

**DENT 536: Pain Science and Practice**

**PP495-02: Project in Pharmacy Practice**

**Course Unit:** 1 c.u.

**Catalog Description:** This interprofessional course focuses on the biopsychosocial aspects of pain and pain management from the perspectives of individualized pain care, scientific discoveries, evidence-based practice and cross-disciplinary learning. Content includes an integrated overview of the neurobiology of pain, psychosocial aspects of the pain experience, pain assessment and outcomes measurement, pharmacological and nonpharmacological approaches to the treatment of acute and chronic pain syndromes, national health policies for pain, evidence-based guidelines and best practices, and interprofessional care delivery models. Peripheral and central modulation of pain, neuroanatomical pathways, neurochemical mediators, and genetics are examined as the basis for explaining pain perception, behaviors and responses to treatments. Pain assessment and management for vulnerable populations are addressed along with strategies to reduce pain treatment disparities. Several acute and chronic (persistent) pain syndromes are discussed across the continuum of care (e.g., primary care, hospital, outpatient pain centers, and home care). Current research findings and evidence-based guidelines are applied to interprofessional collaboration and clinical decision-making to promote optimal care and outcomes for persons experiencing pain. Through case-based and directed learning, classroom simulation, and interactive discussions with national leaders spanning multiple disciplines, students acquire a strong scientific and practice foundation in the clinical care of persons with acute and chronic pain.

**Placement:** Winter 2014 offered as an intersession course

**Location:** Classes will be held in the main auditorium (ground floor) in Claire Fagin Hall 418 Curie Blvd, the School of Nursing Building.

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**Prerequistes:** Students appropriate for this course include graduate nursing students (masters and doctorate), undergraduate senior students in nursing and the biological sciences, medical, dental, and social work students, advanced practice nurses, physicians, dentists, pharmacists, and other health care professionals.

**Co-Requisites:** None

**Course Overview:** This course prepares students with advanced knowledge of pain assessment, pharmacotherapy, nonpharmacological therapies and interventional techniques to address the increasing and complex needs of persons with acute and chronic pain. Safe and effective pain care is based on rational therapeutics grounded in the neurobiology of pain, pathophysiological mechanisms of pain, pain assessment practices, and principles underlying various treatment options. Students learn from nationally and internationally recognized pain experts who present the latest scientific discoveries and research related to the understanding of various pain acute and chronic pain states and pain therapies including multimodal analgesia. Through interactive, problem-based, and independent-guided learning, students apply research and evidence-based content to the care of patients in primary care, hospital, and other health care settings. Students acquire in-depth knowledge of a pain problem or issue of interest through a group assignment.

**Course Objectives:**

1. Explain the pathophysiological mechanisms of pain contributing to central sensitization, neural plasticity and wind-up, and other abnormal pain states.
2. Differentiate mechanisms and characteristics of physiological sources of pain (i.e., somatic, visceral and neuropathic pain).
3. Apply accepted pain taxonomy (e.g., definitions, pain classifications and terminology) to discussions of pain mechanisms, assessment, treatment and specific pain conditions.
4. Evaluate appropriate pain and symptom measures on the basis of the psychometric properties and clinical applications for use in various patient populations considering age, cognitive status, socioeconomic status, educational level, and ethnocultural orientation.
5. Describe psychosocial influences on perceptions of pain and behavioral and cognitive therapies to improve the quality of life of individuals with pain.
6. Discuss pharmacological classes of analgesics including indications, pharmacodynamics, mechanisms of action, dosing parameters, adverse effects, and patient monitoring.
7. Examine the role of rational therapeutics, multimodal therapy, technology-supported pain care, interventional techniques and nonpharmacological approaches for acute and chronic pain.
8. Distinguish differences between physical dependence, tolerance, pseudoaddiction, and addiction and their relevance to designing plans of care.
9. Examine health professional-, systems-, and societal-related barriers to the effective management of pain and influences of research and health policy to overcome pain treatment disparities.
10. Investigate Internet-based professional and patient resources.
11. Translate evidence-based practice guidelines into the clinical care of patients with various types of pain.
12. Engage in cross-disciplinary case-based discussions of acute and chronic pain states to formulate individualized pain treatment plans across the continuum of care.

**Specific Course Content:**

1. National and international health policies to address issues related to pain
2. International Association for the Study of Pain (IASP) pain nomenclature and classification systems
3. Neurobiology of pain including cellular mechanisms for pain, pain pathways, pain modulation and pathophysiological states (central sensitization, wind-up, and neuralplasticity)
4. Acute pain (postoperative, procedure-related and trauma) and chronic (persistent) noncancer and cancer pain states
5. Influence of genetics on pain susceptibility and response to pain treatments
6. Consequences of untreated or poorly managed acute and persistent pain
7. Clinical assessment and measurement of pain
8. Pharmacological classes of analgesics (e.g., nonopioids, opioids, and adjuvant agents)
9. Multi-modal analgesic therapy
10. Nonpharmacological and interventional techniques and alternative and complementary approaches to pain management
11. Issues in pain care for vulnerable populations
12. Evidence-based practice guidelines for pain assessment and management
13. Models for interprofessional care delivery for acute pain, chronic pain, and palliative care
14. Advocacy and resources for patients experiencing pain
15. Societal and ethical issues related to pain management

**Teaching Methods:** Lecture, interactive discussions with faculty and students, problem-based and directed learning, classroom simulation experiences, and independent-guideld learning.

**Course Expectations:** Students are expected to attend all five scheduled class days for the course. Conflicts in schedules must be balanced with the ability to meet the course requirements, and these must be considered prior to registering for this course. The inability to meet the fast-paced and highly interactive course may lead to a failing grade.

**NOTE:** Students will have access to the National Institutes of Health Pain Consortium website to engage in independent-guided learning. All students must complete at least one module of their choice either prior to the course or during the course. <http://painconsortium.nih.gov/>

These modules were developed by 12 participating NIH Centers for Excellence in Pain Education.

**Evaluation Methods: Nursing and Pharmacy Students**

Quiz 30%

Small Group Assignments (EBP and In Class Simulation Exercise) 50%

Active class participation, demonstration of application of didactic content, 20%

reading assignments and evidence-based practice guidelines to in-class discussions

and problem-based learning and simulation experiences, interactions with course faculty

**Evaluation Methods: Medical and Dental Medicine Students**

Small Group Assignments (EBP and In Class Simulation Exercise) 50%

Active class participation, demonstration of application of didactic content, 50%

reading assignments and evidence-based practice guidelines to in-class discussions

and problem-based learning and simulation experiences, interactions with course faculty

**Evidence-based Practice (EBP) Small Group Assignment:** On the 2rd day of class, students in their respective Groups will be assigned to smaller groups (5 to 6 students) and one of the evidence-based practice (EBP) guidelines posted on Blackboard. Students will examine the recommendations in the EBP guideline publication, and each student dyad or triad will select one recommendation. The student will carefully review the recommendation and evaluate the strength of the recommendation and its applicability to care of the patient case and interprofessional practice. On the last day of class, each student will come prepared to do a 3 to 5 minute presentation on the evaluation of the recommendation and application to patient care. Student groups will be assigned to a smaller classroom where students will report on their EPB guideline recommendation. Faculty members will be assigned to the student groups to evaluate students and facilitate discussions. Students will be evaluated as a group for the scope of content, identifying pertinent strengths and challenges of EBP recommendations, and relevance to interprofessional practice.

**In class Simulation Exercise:** On the last day of class, the small student groups will be assigned a patient simulation case scenario, which includes a brief description of the case and student actors. Students will convene over lunch to determine students who will assume the various actor roles and discussants. Students must play the role of a healthcare professional not in their respective discipline or area of specialization in practice. Following, students will role play the scenario (20 minutes) and demonstrate application of course content. Student discussants will critique their fellow student’s performance (10 minutes), and discuss the strengths, challenges, opportunities, and solutions to improving interactions, learning and patient outcomes. This exercise is intended to be realistic of the challenges encountered in course of patient care. Students are encouraged to be creative, thoughtful, and sensitive to the perspectives of various healthcare professionals.

**Required Textbook:** There is no required textbook for this course. Course assigned reading materials will be posted on Blackboard.

**Recommended Textbooks:**

For students planning to practice in acute care and outpatient settings with populations experiencing pain, these students may want to purchase: Pasero, C., & McCaffery, M. (2011). Pain assessment and pharmacological management. St. Louis: Mosby Elsevier. This comprehensive pain textbook is available at the Penn Book Store.

Anand, K.J.S., Stevens B. J., & McGrath P.J. (Eds.). (2007). Pain in Neonates and Infants (3rd ed.). New York: Elsevier.

Benzon, H.T., Rathmell, J.P., Wu, C.L., Turk, D.C., & Argoff, C.F. (Eds.). (2008). *Raj’s practical management of pain* (4th ed.). Philadelphia: Mosby Elsevier.

Bountra ,C., Munglani, R., & Schmidt, W. (Eds.) (2003). *Pain: Current understanding*,

*Emerging therapies and novel approaches to drug discovery*. New York: Marcel Dekker, Inc.

Brune, K. & Handwerker H.O. (Eds.). (2004). *Hyperalgesia: Molecular mechanisms and* *clinical implications.* Seattle: IASP Press.

Carr, D. B., Loeser, J. D., & Morris, D. B. (2005). *Narrative, pain and suffering. Progress in pain research and management.* Seattle, WA: IASP Press.

Hansson, P., Fields, H., Hill, R. & Marchettini, P. (Eds.). (2001). *Neuropathic pain: Pathophysiology and treatment.* Seattle: IASP Press.

Hester, H., Sykes, S, & Peat, S. (Eds.). (2012). Interventional pain control in cancer pain management. Oxford: Oxford University Press.

Gibson, S., & Weiner, D.K. (Eds.). (2005). Pain in older persons. *Progress in pain research and management* (Vol. 35). Seattle, WA: IASP Press.

Gloth, M.F. (Ed.). (2010). *Handbook of pain relief in older adults.* Totowa, NJ: Humana Press.

McMahon, S.B., & Koltzenberg, M. (Eds.). (2006). *Textbook of pain* (5th ed.). Philadelphia, PA: Elsevier Churchill Livingstone.

McPherson, M.L. (2010). Demystifying opioid conversion calculations: A guide for effective dosing. Bethesda, MD.: American Society of Health-System Pharmacists, Inc.

Pasero, C., & McCaffery, M. (2011)*. Pain assessment and pharmacological management*. St. Louis: Mosby Elsevier.

Sinatra, R.S., de Leon-Casasola, O.A., Ginsberg, B., & Viscusi, E.R. (Eds.). (2009). *Acute pain management.* Cambridge: Cambridge University Press.

Wallace, M.S., & Staats, P.S. (2005). *Pain medicine and management. Just the facts.*

New York: McGraw-Hill.

**Pain-focused Journals**

*American Journal of Hospice & Palliative Care*

*American Pain Society: APS Bulletin*

*Anesthesiology*

*Anesthesia & Analgesia*

*Anesthesia Progress*

*British Dental Journal*

*Clinical Journal of Pain*

*Current Headache and Pain Reports*

*Explore*

*European Journal of Pain*

*Headache*

*Journal of the American Dental Association*

*Journal of Alternative and Complementary Medicine*

*Journal of Pain*

*Journal of Pain and Symptom Management*

*Journal of Pain and Palliative Care Pharmacotherapy*

*Journal of Orofacial Pain*

*Pain*

*Pain Management Nursing*

*Pain Medicine*

*Pain Practice*

*Palliative Medicine*

**Professional Internet Resources**

Alliance of State Pain Initiatives <http://aspi.wisc.edu>

American Academy of Pain Medicine (AAPM) <http://www.painmed.org>

American Academy of Hospice and Palliative Medicine <http://www.aahpm.org>

American Dental Association <http://www.ada.org>

American Headache Society <http://www.ahsnet.org>

American Pain Society (APS) [http://www.ampainsoc.org](http://www.ampainsoc.org/)

American Society for Pain Management Nurses [http://www.aspmn.org](http://www.aspmn.org/)

American Society of Regional Anesthesiology and Pain Medicine (ASRA) <http://www.asra.com>

American Society of Anesthesiologists (ASA) <http://www.asahq.org>

Army Regional Anesthesia & Pain Management Initiative (ARAPMI) <http://arapmi.org/maraa-book-project.html>

Center to Advance Palliative Care <http://www.capc.org>

Geriatric Pain [www.geriatricpain.org](http://www.geriatricpain.org)

International Association for Pain and Chemical Dependency <http://www.iapcd.org>

International Association for the Study of Pain (IASP) <http://www.iasp-pain.org//AM/Template.cfm?Section=Home>

National Cancer Center Network (NCCN) <http://www.nccn.org>

NIH National Resource Center for Complementary and Alternative Medicine (NCCAM) <http://nccam.nih.gov/>

National Pain Education Council (NPEC) <http://www.npecweb.org>

Pain.com <http://www.pain.com>

University of Wisconsin Pain and Policy Studies <http://www.painpolicy.wisc.edu>

Wisconsin Pain Initiative <http://aspi.wisc.edu/wpi>

**Topical Outline of Course Content:**

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| **Day 1-Friday**  **Jan 3rd, 2014**  **10:30AM to 5:30PM** | **Day 2-Saturday**  **Jan 4th**  **8:30AM to 5:30PM** |
| **10:30AM to 11:30AM**  Course Overview   * Interprofessional Education * National agendas for 2000 to 2010 decade for pain   **11:30AM to 12:15PM**  The Prescription Epidemic Will be taped on Jan 6th  **12:15PM to 1:00PM Lunch**  **1:00PM to 2:00 PM**  Physiology of Pain   * Characteristics of pain * Anatomy and physiology of the nervous system * Excitatory and inhibitory mediators * Pain modulation   **2:00PM to 2:10PM Break**    **2:10PM to 3:15PM**  Pathophysiology of Pain   * What is central sensitization? * How does neural plasticity affect the pain experience? * How does the wind-up phenomenon contribute to sustained pain states   **3:15PM to 3:30PM Break**  **3:30PM to 4:30PM** Differential Diagnosis for Neuropathic Pain States and Oral/Facial Pain  **4:30PM to 5:15PM** Interactive Discussion: Problem-based Learning  Phantom Pain Experience Moved to Day 2  **5:15PM to 5:30PM**  Panel Discussion with Faculty | **8:30AM to 9:30AM**  National agendas for 2000 to 2010 decade for pain  Physiology of Pain   * Characteristics of pain * Anatomy and physiology of the nervous system * Excitatory and inhibitory mediators * Pain modulation   **9:30 to 10:10AM**  Nonopioids in the Treatment of Acute and Chronic Pain  **10:10AM to 10:25AM Break**  **10:25AM to 11:10AM**  The Nuts and Bolts of Opioid Pharmacology  **11:10AM to 12:10PM** Adjuvant analgesics  Clinical Issues with Opioid Analgesics  **12:10PM to 12:25PM Evidence-based Practice Assignment**  **12:25: to 1:15PM Lunch with your team**  **1:15PM to 2:15PM Breakout Sessions**  Breakout Session 1: The Complexity of Fibromyalgia  Breakout Session 2: Novel Analgesics in the Treatment of Pain  Breakout Session 3: Neuropathic Pain: Case-based Learning for Diabetic Neuropathy and Chemotherapy-induced Peripheral Neuropathy  Breakout session 3: Sickle Cell Disease-related Pediatric Pain  **2:15PM to 2:30PM Break**  **2:30PM to 3:30PM Repeat of Breakout Sessions 1, 2 and 3**  **3:30PM to 3:40PM Break**  **3:40PM to 4:50PM**  Pain Assessment Practices for Special Populations and Pain Measurement   * Measurement tools for assessing pain in adults * Pain assessment with infants and children * Pain assessment with older adults and the cognitively impaired   **~~4:50PM to 5:30PM~~**  ~~Interactive Discussion: Problem-based Learning~~   * ~~Herpes zoster Self-Learning~~   **4:50PM to 5:30PM** Interactive Discussion: Problem-based Learning  Phantom Pain Experience |
| **Day 3 - Sunday**  **Jan 5th, 2014**  **10:45AM to 4:30PM** | **Day 4-Friday**  **Jan 10th, 2014**  **10:45 to 5:30PM** |
| **9:00AM to 10:00AM Pathophysiology of Pain**   * What is central sensitization? * How does neural plasticity affect the pain experience? * How does the wind-up phenomenon contribute to sustained pain states   **~~9:30AM to 10:30AM~~**  **~~Quiz No. 1: Content Day 1~~**  **~~Nursing and Pharmacy Students Only~~**  **10:15AM to 10:30AM break**  **10:30 to 11:45AM**  Regional Anesthesia    **11:45AM to 12:30PM Lunch**  **12:30 to 1:30PM** Nonpharmacological Interventions for Low Back Pain  **1:30 to 1:40PM** Break    **1:40PM to 2:30PM Breakout Sessions – Problem-based Learning**  Breakout Session 1: Perioperative Care the Opioid Dependent Patient  Breakout Session 2: Oral Complications from Cancer Chemotherapy  Breakout Session 3: Neuropathic Pain: Case-based Learning for Diabetic Neuropathy and Chemotherapy-induced Peripheral Neuropathy  **2:30PM to 2:45PM Break**  **2:45PM to 3:45PM**  Overview of Complementary and Alternative Therapies  **3:45PM to 4:30PM**  Team-based work | **8:45AM to 10:15AM**  **Quiz No. 2: Content Day 2**  **Nursing and Pharmacy Students Only**  **10:30PM to 11:30PM** Differential Diagnosis for Neuropathic Pain States and Oral/Facial Pain  **11:30 to 11:45PM Review of the Simulation Exercise**  **11:45AM to 12:45PM** Lunch  **12:45 to 2:15PM**  Management of the Complex Patient with Pain  • Opioid use and misuse  • Cognitive behavioral therapy  • Medical home    **2:15PM to 2:30PM Break**  **2:30PM to 3:30PM**  Pain Treatment Disparities  **3:30PM to 4:30PM**  Discussion: Care Coordination, Spiritual Care, and Economic Issues in Pain Care  **4:30PM to 5:30PM**  Team-based work |
| **Day 5 – Saturday**  **Jan 11th, 2014**  **9:30AM to 3:15PM** |  |
| **9:30AM to 11:30AM**  EBP Project Group Presentations to Faculty  Convene in the Auditorium  **11:30AM to 12:30PM** Lunch Students Work on Simulation Exercise  **12:30PM to 2:30PM**  Analysis and critique of classroom case simulations by faculty and students illustrating clinical reasoning, collaborative decision-making, respectful and skilled interprofessional communication, and collegiality to ensure safe and effective pain care  **2:45PM to 3:15PM**  Summary and evaluation |  |