

**University of California at San Francisco/San Francisco State University
Graduate Program in Physical Therapy**

COURSE TITLE: Pharmacology for Physical Therapists (PT211)

TERM: Spring 2016

CREDIT: 2 quarter units

CLOCK HOURS: 20 hours contact time + approximately 20 hours in preparatory time

COURSE WEBSITE: CLE SITE

PREREQUISITE: Admission in the DPT program

COURSE DIRECTOR: Tina Brock, BSPharm, MS, EdD Office – S953

SESSION LEADS and SUPPORT:

Laurel Carmichael, P3	Dario Nassif, P1
Brandon Conley, P2	Liz Staub, P3
Allison Komerinko, PharmD	Daryush Tabatabai, P3
Scott Myers, P1	Sheri Van Osdol, PharmD, BCPS
Uche Mordi, P1	

COURSE DESCRIPTION and GOALS:

This course will focus on how medication classes and, in some cases, specific medicines aid in or interact with common modalities used in physical therapy, including: therapeutic exercise, ultrasound, electrical stimulation and TENS, traction, joint mobilization, soft tissue mobilization/massage, heat, ice, iontophoresis, laser/light therapy, myofascial decompression, and whirlpool. It will also include discussions of how physical therapists and pharmacists can work together to improve patient care.

This course includes both physical therapy and pharmacy students and is designed to support achievement of the following interprofessional education graduation milestones:

- Use the knowledge of one's own role and the roles of other health professionals to appropriately assess and address the health care needs of the patients and populations served
- Communicate with other health professionals in a responsive and responsible manner that supports a collaborative approach to the maintenance of health and the treatment of disease in individual patients and populations
- Work with other health professionals to establish and maintain a climate of mutual respect, dignity, diversity, ethical integrity, and trust

SUPPLEMENTAL TEXTBOOK:

Pharmacology for the Physical Therapist; Panus, P.; Katzung, B.; Jobst, E.; Tinsley, S.; Masters, S.; Trevor, A.; McGraw-Hill San Francisco, CA, 2008

TEACHING METHODS AND LEARNING EXPERIENCES:

A combination of pharmacists and PharmD students will serve as instructors for the course. A majority of the sessions use a “flipped classroom” model where physical therapy students will review brief online video lectures and complete formative assessments prior to class, followed by active participation in interactive case discussions during the sessions. Students will complete one group project outside of class. Some face-to-face lecture and laboratory activities will also be included.

METHODS OF EVALUATION:

The course grade will be determined by participation (i.e., consistent completion of formative assessment, active engagement in course activities), as well as completion of a group project and a summative group-based case assessment.

TEACH-BACK PROJECT:

Interprofessional education occurs when members (or students) of two or more health and/or social care professions engage in learning *with, from, and about* each other to improve collaboration and the delivery of care. In much of this course, physical therapists are learning about medicines from pharmacy trainees. This project allows physical therapy students to teach pharmacy trainees about physical therapy treatments.

Physical therapy students will work together to create 5-minute presentations (no more than 3 slides) describing the assigned physical therapy treatment and potential medication related concerns that may be associated with it. Presenters are not required to list specific drugs or drug classes for this presentation but rather emphasize medicine *effects* that would be problematic and the reasons for this. Samples from the 2015 cohort will be made available on the CLE.

For example, if the treatment in question is “standup paddleboarding” then one might predict that medicines that affect the vestibular system might cause problems with balance.

Group name	Physical therapy treatment
Alendronate	Therapeutic exercise
Albuterol	Joint mobilization
Diphenhydramine	Hot pack/heat
Glipizide	Electrical stimulation/TENS
Lisinopril	Ice
Olanzapine	Ultrasound
Oxycodone	Iontophoresis
Phenytoin	Soft tissue mobilization (massage)
Prednisone	Myofascial decompression (cupping)
Sertraline	Laser

DISABILITY SERVICES:

The Physical Therapy program is committed to providing all students equal access to learning opportunities. Student Disability Services at UCSF (SDS) is the campus office that works with students who have disabilities to determine and coordinate reasonable accommodations. Students who have, or think they may have, a disability are invited to the SDS office for a confidential discussion. More information is available online at <http://sds.ucsf.edu>.

COURSE SCHEDULE:

Date	Time	Place	Discussion Leader	Topic	Pre-Class Assignments
Thurs March 3	9:30-10:00	UCSF HSW 302	Tina Brock	Pharmacologic principles for the physical therapist (LECTURE)	See CLE for group assignments. Please sit in groups for each class.
	10:15-11:30		Allison Komerinko	Pharmacokinetics & pharmacodynamics for the physical therapist (LECTURE)	
Thurs March 10	9:30 – 12:00	IRC	Sheri Van Osdol	Drug information for physical therapists (LABORATORY)	None
Thurs March 17	9:10-10:15	UCSF CL 220 CL 223	Brandon Conley	Respiratory medications (CASE DISCUSSION)	View video, complete quiz
	10:15-11:30		Laurel Carmichael	Diabetes medications (CASE DISCUSSION)	View video, complete quiz
Thurs March 24	SPRING BREAK – no class				None
Mon, Mar 28	9:10-10:15	UCSF CL220 CL223	Liz Staub	Cardiovascular medications (CASE DISCUSSION)	View video, complete quiz
	10:15-11:30		Daryush Tabatabai	Anti-seizure medications (CASE DISCUSSION)	View video, complete quiz
Thurs April 7	9:10-10:15	UCSF CL220 CL223	PI - TBD	OTC and Alternative medications (CASE DISCUSSION)	View video, complete quiz
	10:15-11:30		Laurel Carmichael	Opioid pain medications (CASE DISCUSSION)	View video, complete quiz
Thurs April 14	9:10-10:15	UCSF CL220 CL223	Daryush Tabatabai	Psychiatric and movement disorder medications (CASE DISCUSSION)	View video, complete quiz
	10:15 -11:30		Liz Staub	Glucocorticoids and bone medications (CASE DISCUSSION)	View video, complete quiz
Thurs April 21	9:10-10:15	UCSF CL220 CL223	All	Teach-back presentations	Teach-back prep
	10:15-11:30		P1 Team	Exam review	Review
Thurs April 28	9:10-11:30	UCSF CL220 CL223	All	FINAL EXAM	

SESSION OBJECTIVES:

After completing the preparatory work and participating actively in the session, the learner will be able to -

Pharmacologic Principles for the Physical Therapist (PT)

1. Navigate to the course website for detailed course information
2. Compare the common goals of pharmacotherapy and physical therapy treatments
3. Differentiate between class name, chemical name, generic name, brand/trade name for medicine for prescription and over-the-counter (OTC) medicines
4. Discuss generalities of how medicines may influence/be influenced by physical therapy treatments

Pharmacokinetics and Pharmacodynamics for the PT

1. Contrast pharmacokinetics (PK) and pharmacodynamics (PD) and be able to classify a drug-drug interaction as either PK or PD in nature
2. Contrast the terms agonist and antagonist as interpreted by pharmacists and by physical therapists
3. Define the ADME parameters and how these influence drug effects
4. Identify situations where therapeutic drug monitoring is needed

Drug Information for the PT

1. Identify and recommend appropriate lay and professional resources for accessing information about medicines
2. Use common professional resources to locate and interpret specific information about medicines
3. Guide both lay users and health professionals to reliable sources of health information in cyberspace.

Respiratory Medications

1. Differentiate treatment approaches for allergic rhinitis, asthma, and COPD
2. Distinguish between quick relief and long term control medicines for asthma
3. Match the adverse effects (e.g., sedation, orthostatic hypotension, hypertension, tachycardia, osteoporosis) of common respiratory agents that could interfere with physical therapy treatments
4. Demonstrate the appropriate support response in a patient experiencing an acute asthma attack

Diabetes Medications

1. Describe the mechanism of action of key classes of diabetes medications
2. Recognize adverse effects of medicines used in the management of diabetes, particularly those that can cause hypoglycemia
3. Recognize medication-timing windows that may optimize the efficacy and benefit of physical therapy treatments
4. Explain how to respond to a hypoglycemic emergency

Cardiovascular Medications

1. Recognize the generic names of the representative drug(s) for each class of medications
2. Briefly describe the mechanism of action of each representative drug, as it relates to the pathophysiology of the disease state
3. When presented with a patient's medication administration record, list the medication side effects that you will watch for during the patient's PT sessions

Medications for Seizure Disorders and Neuropathies

1. Recognize different classes of anti-seizure medications that are used to treat focal vs. generalized seizures
2. Explain the advantages of optimized seizure control for physical therapy treatments
3. Match the adverse effects that could interfere with physical therapy treatments with common anti-seizure agents
4. Define status epilepticus and identify treatments indicated for seizure emergencies

Common Over-the-Counter (OTC) and Alternative Medicines

1. Match common OTC medicines with their indication for use
2. Compare and contrast Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) and acetaminophen with regard to uses and precautions.
3. Explain the therapeutic and side effects of common cold and allergy medications and how these relate to physical therapy treatments
4. Identify reliable resources for information about supplement safety and efficacy

Opioid Pain Management

1. Describe the rationales for the use of (a) opioid agonists, (b) mixed agonist-antagonist opioids and (c) pure antagonist opioids
2. Describe how different dosing forms/routes can influence achievement of pain control
3. Identify opioid adverse effects and management strategies
4. Explain the advantages of optimized pain control regimens for physical therapy treatment
5. Explain how opioid adverse drug reactions could clinically interfere with physical therapy treatments

Medications for Psychiatric and Movement Disorders

1. Explain the mechanism of action and important adverse effects of medications used to treat psychiatric and movement disorders
2. Recognize medication-timing windows that may optimize the efficacy and benefit of physical therapy treatments

Glucocorticoids and Bone-Strengthening Agents

1. List the side effects of short-and long-term glucocorticoid use
2. Explain the advantages of bone strengthening (i.e., as enhanced by calcium/vitamin D, bisphosphonates, SERMs) for physical therapy treatments
3. Match the adverse effects (e.g., nausea, hot flushes) of common bone strengthening agents that could interfere with physical therapy treatments

Teach-back Exercise

1. Describe common physical therapy treatments and how medications may interact with these
2. Describe how physical therapists and pharmacists can work together to improve patient care
3. Describe communication challenges that may exist between members of the health care team and how these can be ameliorated