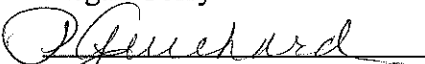



City College of San Francisco  
Course Outline of Record

I. GENERAL DESCRIPTION

A. Approval Date	October 2013
B. Department	Health Care Technology
C. Course Number	EMTP 122
D. Course Title	Pharmacology and Ventilatory Mgt
E. Course Outline Preparer(s)	Megan Corry
F. Department Chairperson	 Peggy Guichard
G. Dean	 Terry Hall <small>Terry Hall, Dean John Adams Campus/ School of Health &amp; P.E.</small>

II. COURSE SPECIFICS

A. Hours	Lecture – 22 total Conference – 20 total
B. Units	2.5
C. Prerequisites	Acceptance into the Paramedic Program
Corequisites	None
Advisories	None
D. Course Justification	The course content reflects the material outlined in the National EMS Education Standards.
E. Field Trips	No
F. Method of Grading	Letter
G. Repeatability	0

III. CATALOG DESCRIPTION

Basic principles of pharmacology including drug classifications, actions, therapeutic uses in emergency medical services (EMS) and methods of medication administration. Basic and advanced airway and ventilatory management principles.

IV. MAJOR LEARNING OUTCOMES

Upon completion of this course a student will be able to:

- Identify the major classifications of drugs according to mechanism of action, organ system affected and clinical condition used to treat.
- Define each element of a drug profile including names, mechanism of action, indications, contraindications, common side effects, dosages and precautions.
- Demonstrate appropriate use of body substance isolation precautions while obtaining intravenous access and administering intramuscular and subcutaneous injections.
- Demonstrate appropriate use of body substance isolation precautions while performing basic and advanced airway and ventilatory procedures.
- Identify the six rights of medication administration.
- Demonstrate proper technique for medication administration via the intravenous, intraosseous, intramuscular, subcutaneous, intranasal, transdermal, rectal, sublingual and inhaled routes.
- Demonstrate proper technique for obtaining intravenous and intraosseous access.

- H. Demonstrate proper technique for performing basic and advanced airway and ventilatory procedures.
- I. Calculate the proper medication dosages for a patient by weight.
- J. Calculate the volume to be administered of a medication for a given dosage and concentration..
- K. Calculate the proper drip rate for a given volume of fluid to be administered over time.
- L. Calculate the proper drip rate for a medication infusion.

## V. CONTENTS

### A. Basic Pharmacology

- 1. Drug Naming
- 2. Sources of drug information and reference
- 3. Components of a drug profile
- 4. Historical development of the Pharmaceutical industry in the United States
- 5. Drug Standards and Regulation
- 6. Pharmacokinetics
  - a. Absorption
  - b. Distribution
  - c. Biotransformation
  - d. Elimination
- 7. Pharmacodynamics
  - a. Agonist and antagonist
  - b. Dose-response assessment
  - c. Therapeutic index
  - d. Biological half-life
- 8. Responses to Drug Administration: terminology
- 9. Factors affecting drug response
- 10. Special Considerations
  - a. Pregnant patients
  - b. Geriatrics
  - c. Pediatrics

### B. Drug Classifications

- 1. Drugs that affect the Nervous system
  - a. Central Nervous System drugs
    - 1. Analgesics and antagonists
    - 2. Anesthetics
    - 3. Sedative/Hypnotics
    - 4. Anti-seizure
    - 5. CNS Stimulants
    - 6. Psychotherapeutic medications
    - 7. Drugs for CNS affecting peripheral dysfunctions: movement disorders
    - 8. Skeletal muscle relaxants
  - b. Autonomic Pharmacology
    - 1. Cholinergic agonists and antagonists
    - 2. Adrenergic agonists and antagonists

2. Drugs that affect the Cardiovascular system
  - a. Antidysrhythmic agents: Class I, II, III, IV and miscellaneous
  - b. Antihypertensive agents
  - c. Hemostatic agents
  - d. Antihyperlipidemic agents
3. Drugs that affect the Respiratory system
  - a. Bronchodilators
  - b. Other drugs used to treat asthma and COPD
4. Drugs that affect the Gastrointestinal system
  - a. Anti-ulcer medications
  - b. Laxatives and antidiarrheals
  - c. Antiemetics, antinausea
5. Drugs that affect the Eyes and Ears
6. Drugs that affect the Endocrine system
  - a. The pancreas and diabetes
  - b. Thyroid medications
  - c. Adrenal medications
7. Drugs that affect the Immune system
  - a. The inflammatory response and anti-inflammatory drugs
  - b. Immune suppressants
8. Drugs that affect the Reproductive system and sexual behavior
  - a. Erectile dysfunction medications
  - b. Fertility drugs
9. Drugs used to treat cancer
10. Antimicrobials
  - a. Antibiotics
  - b. Antivirals
11. Antidotes used in Emergency care
- C. Medication Administration
  1. The Six Rights of Drug Administration: patient, drug, dose, time, route, documentation
  2. Medical Asepsis
  3. Routes of administration
    - a. Enteral
    - b. Parenteral
  4. Intravenous access
    - a. IV fluids
    - b. Catheter types and sizing
    - c. Administration sets
    - d. Indications and contraindications
    - e. Complications and troubleshooting
    - f. Technique
  5. Intraosseous access
    - a. Indications and contraindications
    - b. Complications and troubleshooting
    - c. Technique

#### D. Medical Calculations

1. Percentage
2. Ratios
3. Basic metric conversions
4. Volume to be administered calculations
5. Volume infusion calculations
6. Drug infusion calculations

#### E. Airway and Ventilatory Management Principles

1. Review of Respiratory Physiology
2. Assessment of oxygenation and ventilation
  - a. Pulse oximetry
  - b. End tidal carbon dioxide (ETCO<sub>2</sub>): capnography
3. The Fick Principle
4. Respiratory Problems
  - a. Airway Obstruction: upper and lower
  - b. Inadequate ventilation
5. Respiratory System Assessment
  - a. A-B of ABC's
  - b. Focused history and physical examination
    1. P-A-S-T-E mnemonic
    2. Lung sounds
6. Basic Airway Management
7. Advanced Airway Management
  - a. Review of devices and techniques
  - b. Troubleshooting using the D-O-P-E mnemonic
  - c. Rapid Sequence intubation using sedative and paralytic drugs
8. Oxygen delivery devices and methods
9. Ventilatory devices and methods

### VI. INSTRUCTIONAL METHODOLOGY

#### A. Assignments

1. In-class Assignments
  - a. Drug classifications activity worksheets: students work in small groups to complete worksheets designed to apply principles to lists of commonly prescribed medications.
  - b. Drug calculations worksheets: students work in small groups to complete drug calculations worksheets to assist learning of metric conversions, weight-based calculations, concentration and dosage calculations and infusion calculations.
  - c. Airway skills log: students maintain a log of advanced life support airway skills performed on mannequins and peer-reviewed by fellow classmates.
  - d. Pharmacology skills log: students maintain a log of pharmacology skills performed and peer-reviewed by fellow classmates.
2. Out-of-class Assignments:
  - a. Chapter reading from the textbook as assigned on the course syllabus to be completed before the class session.

- b. Online assignments:
  - 1. Review of posted slides and outlines
  - 2. Take online multiple-choice quizzes associated with each Chapter before coming to class.
  - 3. Forum discussion: participate in message board discussion related to topics discussed in class as method of continuous study and peer-guided learning.
- B. Evaluation
  - 1. In-class assignments (classifications and calculations worksheets) will be awarded points for completion and accuracy of content.
  - 2. Written examinations including multiple-choice, true/false, short answer critical thinking questions within each topic area, designed to assess foundational knowledge, application and analytical skills in the cognitive domain.
    - a. In-class quizzes: Weekly quizzes to assess the cognitive skills on subject matter discussed in previous week of class.
    - b. Comprehensive final examination covering all assigned chapters and additional materials provided by the instructor.
  - 3. Online participation will be graded for quality of posted discussion items and completion of quizzes by deadline.
- C. Textbooks and other instructional materials
  - 1. Mosby's Paramedic Textbook, revised 3rd edition. Mosby/Elsevier publishing, St. Louis, Missouri, 2007.
  - 2. Insight Learning Management System (Moodle). City College of San Francisco, 2011.
  - 3. Handouts provided by the instructor of updated medication lists and methods of medication calculation.
  - 4. Tarascon's pharmacopeia, Jones and Bartlett publishing, Subury, MA, updated yearly.
  - 5. EMS Field Guide, ALS version. Informed publishing, Portland, Ore., updated yearly.

## VII. TITLE 5 CLASSIFICATION

CREDIT/DEGREE APPLICABLE (meets all standards of Title 5. Section 55002(a)).