

# D H 330: NITROUS OXIDE/ OXYGEN ANALGESIA

## Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2021
Units:	1
Hours:	1 lecture, 1 laboratory per week (24 total per quarter)
Advisory:	Not open to students with credit in D H 67.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

## Student Learning Outcomes

- Students will be able to describe the function of all the parts of a fail-safe nitrous oxide/oxygen machine.
- Students will be able to demonstrate the procedures to safely achieve sedation in patients.

## Description

The study of nitrous oxide/oxygen analgesia used in the dental practice. Emphasis will be placed on understanding the mechanism of sedation, risks and benefits associated with nitrous oxide sedation, how to administer and properly document the use of nitrous oxide. Intended for students in the Dental Hygiene Baccalaureate Degree Program; enrollment is limited to students accepted in the program.

## Course Objectives

The student will be able to:

- Identify the physical, chemical and pharmacokinetic properties of nitrous oxide sedation.
- Analyze the indications and contraindications for use of nitrous oxide sedation in dental procedures.
- Describe the principles of respiration physiology, individual biovariability and drug titration.
- Describe and demonstrate use of the armamentarium of nitrous oxide machines, including the function of each part.
- Demonstrate safe administration of nitrous oxide sedation, including pre and post operative instructions for the patient, proper documentation for a sedation case, the protocol for disinfection of sedation apparatus between patients, on two patients in pre-clinical lab and three patients in a clinical lab.
- Explain the legal responsibilities of the dental hygiene regarding the administration of nitrous oxide/oxygen analgesia, including the regulations in the California Dental Practice Act and informed consent.

## Course Content

- Physical, chemical and pharmacokinetic properties of nitrous oxide sedation
  - History of nitrous oxide sedation
  - Gas properties of nitrous oxide

- Gas properties of oxygen
- Indications and contraindications
  - Indications
    - Pain
    - Anxiety
    - Calming
      - Tachycardia
      - Reducing postural hypotension
    - Minimize gag reflex
  - Contraindications
    - Pregnancy
    - History or current drug/substance abuse
    - Inability to communicate
    - Medical conditions
      - Tympanic membrane surgery
      - Bowel impaction
      - Ocular surgery with specific implants
      - Cystic fibrosis
      - Respiratory diseases: COPD, emphysema
      - Psychoses or mental illness
      - Upper respiratory infection
- Principles of respiration physiology
  - Respiratory physiology
  - Onset of sedation
  - Metabolism
  - Tidal volume
  - Physiology of pain perception
  - Physiologic reactions of the body to anxiety
- Equipment for administration of nitrous oxide/oxygen analgesia
  - Centralized systems
  - Portable systems
  - Digital flowmeter
  - Reservoir bag
  - Scavenging nasal hood
- Clinical administration of nitrous oxide/oxygen analgesia
  - Preoperative assessment
    - Review health history
    - Vital signs
    - Informed consent
  - Procedure initiation
    - Induction
    - Titration
    - Observe patient
    - Monitoring
    - Terminate nitrous flow
    - Continue oxygen flow
    - Recovery, discharge patient
    - Disinfection and sterilization procedures
    - Chart documentation
- Legal and ethical considerations
  - Direct supervision duty
  - Informed consent
  - Minimizing trace gas
  - Abuse of nitrous oxide
  - Current cardiopulmonary respiration certification

## Lab Content

Instruction and clinical practice on the administration of nitrous oxide/oxygen analgesia, on two patients in pre-clinical lab and three patients in a clinical lab.

## **Special Facilities and/or Equipment**

Multimedia classroom, dental hygiene clinic with fail-safe nitrous oxide/oxygen machines and scavenging masks, dental supplies and equipment, student instrument kit, personal protective barriers, expendable supplies kit, sterilization lab.

## **Method(s) of Evaluation**

Methods of Evaluation may include but are not limited to the following:

Quizzes, final examination and laboratory evaluations on the safe administration of nitrous oxide/oxygen analgesia

## **Method(s) of Instruction**

Methods of Instruction may include but are not limited to the following:

Presentation using videos

Lecture

Skill demonstrations

Clinical skills practice

## **Representative Text(s) and Other Materials**

Clark, Morris S., and Ann L. Brunick. Handbook of Nitrous Oxide and Oxygen Sedation, 5th ed. 2019.

Bowen, D., and J. Pieren. Darby and Walsh Dental Hygiene Theory and Practice, 5th ed. 2019.

## **Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments**

Weekly reading assignments in textbook, 1 to 3 chapters per week (25-50 pages).

## **Discipline(s)**

Dental Technology