Course Content Guide

Community and Technical College
Dental Hygiene Program
DH A310
Oral Pain Control
3 Credits

I. **Course Description**
Examines pharmacology, armamentarium, anatomical and physiological considerations, administration techniques, and potential complications of local anesthesia. Analyzes pharmacology, administration techniques, medical contraindications, and management complications accompanying administration and monitoring of nitrous oxide. NOTE: This course satisfies requirements of 12 ACC 28.340, Alaska State Dental Statutes and eligibility to take the Western Regional Board Examination for certification of dental hygienists to administer local anesthetics. It also meets regulation requirements for dental hygienists to administer and monitor nitrous oxide analgesia (12 AAC 28.720).

II. **Course Design**
A. Designed as a preclinical course for second year dental hygiene students.
B. Credits 3
C. Total student involvement time:
   1. Lecture: 22.5 hours
   2. Lab: 45 hours
   3. Outside: 75 hours
D. DH A310 Advanced Techniques for Dental Hygienists is required for an Associate of Applied Science degree in Dental Hygiene.
E. This course has fees.
F. This course may be taught in any time frame, but not less than 1 week per credit.
G. This is a revised course.
H. This course is coordinated with extended sites, list serve, and the UAF Dental Hygiene Program.
I. This course is a 300-level course because it expands and applies knowledge obtained in previous coursework.

III. **Course Activities**
This course will primarily be conducted through lecture, laboratory activities, and class participation. Major activities in the laboratory sessions consist of instructor demonstration and student practice on lab partners.
IV. **Course Prerequisites and Registration Restrictions**
Course Prerequisites: [DH A204; DH A295D; DH A365] with a minimum grade of C.
Registration Restrictions: Departmental approval and current BLS certification.

V. **Course Evaluation**--Grades will be A-F. Student evaluation may be based on examinations, quizzes, class attendance and participation, task analyses, and/or timely completion of assignments, projects, and hands-on exercises.

VI. **Course Curriculum**

1.0 Safety
   1.1 Campus and classroom safety
   1.2 Infection control procedures
   1.3 Use of equipment
   1.4 Use of chemicals
   1.5 Personal safety regulations

2.0 Nerve Conduction and Pain
   2.1 Neuron anatomy and physiology
   2.2 Nerve fiber classification
   2.3 Local anesthetic mode of action
   2.4 Pain
      2.5 Types
      2.6 Psychological effects
      2.7 Anxiety control

3.0 Local Anesthetics
   3.1 Action
      3.1.1 Mode of action
      3.1.2 Base and cation molecules
      3.1.3 Effect of pH
      3.1.4 Factors affecting effectiveness
   3.2 Injectable anesthetics
   3.3 Topical anesthetics

4.0 Pharmacology
   4.1 Esthers and amides
   4.2 Absorption
   4.3 Distribution
   4.4 Metabolism
   4.5 Physiologic actions
   4.6 Dosage levels
   4.7 Overdose
5.0 Vasoconstrictors
  5.1 Uses
  5.2 Pharmacology
  5.3 Types
  5.4 Dosage levels

6.0 Local Anesthetic Selection
  6.1 Specific characteristics
  6.2 Patient physical status
  6.3 Preservatives

7.0 Anatomy
  7.1 Trigeminal nerve anatomy
    7.1.1 Ophthalmic division
    7.1.2 Maxillary division
    7.1.3 Mandibular division
  7.2 Skull and mandible

8.0 Armamentarium
  8.1 Anesthetic cartridges
  8.2 Needles
  8.3 Syringes

9.0 Injection Techniques
  9.1 General principles
  9.2 Maxillary
    9.2.1 Infiltration
    9.2.2 Anterior superior alveolar
    9.2.3 Middle superior alveolar
    9.2.4 Posterior superior alveolar
    9.2.5 Infraorbital
    9.2.6 Nasopalatine
    9.2.7 Greater (anterior) palatine
  9.3 Mandibular
    9.3.1 Inferior alveolar
    9.3.2 Mental
    9.3.3 Incisive
    9.3.4 Buccal
    9.3.5 Gow Gates
10.0 Alternatives
10.1 Agents
  10.1.1 EMLA (eutectic mixture of local anesthetics), e.g. Oraqix
  10.1.2 Patches
  10.1.3 Dyclonine hydrochloride
  10.1.4 Other
10.2 Electronic dental anesthesia
10.3 Computer controlled delivery systems
10.4 Reversal agents
10.5 Techniques
  10.5.1 AMSA technique
  10.5.2 PDL injections
  10.5.3 Intraosseous injections

11.0 Patient Evaluation
11.1 Health history
11.2 Vital signs
11.3 ASA classification
11.4 Cardiac patients
11.5 Thyroid dysfunction
11.6 Metabolic dysfunction, seizures, and blood dyscrasias
11.7 Drug interactions
11.8 Patient management

12.0 Risk Management
12.1 Informed consent
12.2 Communication
12.3 Documentation
12.4 Occupational exposure and post-exposure protocol

13.0 Nitrous Oxide and Oxygen Sedation
13.1 History
13.2 Advantages and disadvantages
13.3 Equipment use and cautions
13.4 Scavenging systems
13.5 OSHA guidelines
13.6 Anatomy and physiology of respiration
13.7 Pharmacology
13.8 Physical response and adverse reactions
13.9 Technique
  13.9.1 Induction
  13.9.2 Monitoring
  13.9.3 Documentation
13.10 Complications and patient management
VII. **Suggested Texts**

VIII. **Bibliography**

IX. **Instructional Goals, Student Outcomes, and Assessment Procedures:**
A. Instructional Goals: Prepare students with knowledge and skills for administration of local anesthetics and nitrous oxide.

B. Student Outcomes/Assessment Procedures

<table>
<thead>
<tr>
<th>Student Outcomes</th>
<th>Assessment Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>After successful completion of this course, students will be able to:</td>
<td></td>
</tr>
<tr>
<td>Demonstrate safety procedures as it pertains to laboratory activities.</td>
<td>Laboratory participation</td>
</tr>
<tr>
<td>Summarize nerve conduction and the process of nerve conduction blockade related to oral pain control agents.</td>
<td>Written or computerized examination</td>
</tr>
<tr>
<td>Demonstrate application of topical anesthetics and use of alternative oral pain control methods.</td>
<td>Written or computerized examination</td>
</tr>
<tr>
<td>Demonstrate safe and aseptic handling of local anesthetic agents, syringes, sharps, and other armamentarium.</td>
<td>Written or computerized examination</td>
</tr>
<tr>
<td>Differentiate typical and atypical reactions to topical and local anesthetic agents and determine treatment protocol for atypical reactions.</td>
<td>Written or computerized examination</td>
</tr>
<tr>
<td>Evaluate necessity and type of oral pain control method for a given case study or clinical situation.</td>
<td>Written or computerized examination</td>
</tr>
<tr>
<td>Perform and achieve proper oral pain control in a clinical setting, including nitrous oxide sedation.</td>
<td>Task analysis</td>
</tr>
<tr>
<td>Appraise current literature on oral pain control.</td>
<td>Literature review</td>
</tr>
</tbody>
</table>