CLINICAL SCIENCES I
Course Syllabus

Course Number: PDA-0110A
OCAS Code: None
Course Length: 182 Hours
Career Cluster: Health Science
Career Pathway: Therapeutic Sciences
Career Major(s): Professional Dental Assistant

Course Description:
The content of this course prepares the student to participate in laboratory and clinical experiences necessary to develop the skills to become a dental assistant. The course provides classroom and laboratory instruction.

Textbooks:

Resources:
Heartsaver First Aid, American Heart Association, (2011)
First Aid Video

Online Components:
http://evolve.elsevier.com/staticPages/s_index.html, Interactive Web Site, Sanders Elsevier
http://tulsatech.blackboard.com/

Software:
Eaglesoft 17.0 Dental Practice Management Software

Course Objectives:

A. **General Dentistry**
   1. Describe the three major parts of most hand instruments.  
   2. State the functions of the three instruments found in the basic setup used for all dental procedures.

B. **Legal and Ethical Issues**
   1. Explain legal responsibilities and regulations in the dental profession.
   2. Analyze ethical and legal consideration in dental assisting.
   3. Describe how dental records are maintained in accordance with legal guidelines.
4. List the required Oklahoma dental assisting permits.
5. Explain the process to obtain and maintain the Oklahoma required dental assisting permits.
6. Explain how to obtain and maintain each of the Oklahoma dental assistant expanded function permits.

C. Dental Charting
1. Demonstrate charting a dental examination using the symbols commonly employed to record dental conditions and treatment.
2. Prepare a patient chart.

D. Basic Dental Operatory Procedures
1. Discuss major pieces of equipment found in the dental operatory.
2. Describe the use and care for each of these pieces of equipment.
3. Describe the morning and evening routines for operatory care.
4. Describe the correct seated position of the operator and assistant at chairside.
5. Prepare the operatory area.
6. Demonstrate seating the patient, placing the patient in the supine position, and restoring the patient to an upright position.
7. Demonstrate operatory care between patients to ensure infection control.
8. Operate operatory equipment.

E. Dental Rotary Instruments
1. Describe the major uses of rotary instruments in dentistry.
2. Differentiate between high-speed and low-speed hand pieces.
3. State at least one use for each of the following: straight hand piece (SHP), right-angle hand piece (RAHP), and contra-angle hand piece (CAHP).
4. State the three major pieces of information needed in order to identify a bur.
5. Describe the use of dental burs, stones, points, and discs.
6. Demonstrate preparation for use, bur changing, and caring for a high-speed hand piece.
7. List the impact of improper care of headpieces with fiber optic lights.
8. Demonstrate cleaning, sterilizing, and caring for a contra-angle hand piece and a right-angle hand piece.

F. Chairside Assisting
1. Describe the role of the dental assistant as an administrative assistant, as a chairside assistant in four-handed dentistry, as a coordinating assistant in six-handed dentistry, and as an extended function dental assistant.
2. Describe the basic components of a complete dental examination.
3. List and describe Black's classification of cavities.
4. State where the left and right sides of the dental arches appear on anatomic and geometric dental diagrams.
5. Demonstrate taking and recording a patient's vital signs.
6. Perform an oral examination.
7. Discuss advantages and any disadvantages of amalgam restorations.
8. Define these terms related to amalgam restorations: mechanical retention, microleakage, pulpal floor, and the names of the cavity walls (buccal, dentinal, distal, facial, gingival, incisal, labial, lingual, mesial, proximal).
9. Discuss the steps in cavity preparation.
10. Define these terms related to the structure of amalgam: alloy, mercury, high-copper alloy, mercury to alloy ratios, and trituration.
11. Identify the parts of a Tofflemire retainer.
12. Demonstrate the assembly of a Tofflemire retainer.
13. Demonstrate preparing a pre-set tray for the placement of an amalgam restoration.
14. Differentiate between inlays, onlays, and full crowns.
15. Describe the components of a fixed bridge and state the functions of each. 
16. Describe cosmetic dentistry and define these related terms: bonding, enamel bonding, dentin bonding, veneer, direct-bonded resin veneer, indirect-bonded resin veneer, porcelain veneer.
17. State four patient responsibilities in maintaining cosmetic restorations.
18. Describe the major characteristics of the three forms of composites.

G. Perform Oral Evacuation, Moisture control, and Instrument Transfer.
1. Describe the four operating zones and the uses of each.
2. State the precautions for use of the high volume evacuator (HVE) tip.
3. Demonstrate assembling, adjusting, and positioning of the HVE tip in each area of the oral cavity.
4. State indications for using the dental dam.
5. Describe the specialized types of dental dam and dental dam clamps.
6. Explain punching dental dam for placement on single or multiple maxillary or mandibular teeth.
7. Describe the placement, inversion, and removal of dental dam.
8. Demonstrate retraction of the cheeks, tongue and lips.

H. Alginate impressions & Diagnostic Casts
1. Demonstrate preparing trays, mixing alginate impression material, loading trays, and assisting the operator during the taking of maxillary and mandibular impressions.
2. Describe the technique for taking a wax-bite registration.
3. Set up a dental operatory with the needed instruments, and materials needed to take alginate impressions for diagnostic casts and a wax bite registration.
4. Demonstrate proper disinfection, rinsing, and storage of alginate impressions prior to pouring.
5. Identify the possible impact of improper disinfection, and storage of alginate impressions, including time limitations.
7. Recognize the correct shape of maxillary and mandibular art portions of diagnostic casts and the factors determining the shaping of the art portions.
8. Describe the three major steps involved in producing accurate dental diagnostic casts.
9. Demonstrate creating maxillary and mandibular diagnostic casts from alginate impressions using the double-pour method.
10. Demonstrate trimming, finishing, and labeling maxillary and mandibular diagnostic casts.

I. Tooth Whitening
1. Differentiate between types of whitening procedures
2. Describe commonly used dental whitening materials
3. Recognize the percentages of whitening agents commonly used for in-office and at home treatments.
4. Identify the process by which whitening agents commonly used lighten tooth color
5. Recognize the different requirements in an alginate impression taken for a diagnostic cast versus a bleaching tray fabrication cast.
6. Describe the difference in pouring up a diagnostic cast with a base and a bleaching tray fabrication cast.
7. Describe the rationale for use of a block out material for fabrication of bleaching tray reservoirs.
8. Demonstrate proper preparation of bleaching casts for producing bleaching tray reservoirs
9. Demonstrate use of a dental vacuum former for fabrication of a bleaching tray.
10. Demonstrate proper trimming and scalloping of a bleaching tray
11. Identify and describe the most common adverse effects of tooth whitening
12. Give possible suggestions for prevention of, or solutions for, common adverse effects of tooth whitening
13. Describe the dental assistant’s role in tooth whitening, including preoperative patient instructions

J. Assist in the Administration of Pharmacological Agents.
   1. Differentiate between the brand names and generic names of drugs.
   2. Discuss abused drugs ad why it is a concern to the dental practice.
   3. Describe the placement of a topical anesthetic prior to the administration of a local anesthetic.
   4. Describe obtaining local anesthesia by block and infiltration injection techniques.
   5. Identify commonly used dental block and infiltration injection sites by name and location in the oral cavity.
   6. Describe and locate the areas generally anesthetized by commonly used dental blocks and infiltrations.
   7. Describe the use of nitrous oxide-oxygen relative analgesia in dentistry.
   8. Demonstrate the preparation of a local anesthetic syringe.
   9. Demonstrate passing and receiving the anesthetic syringe at chairside.
  10. Discuss analgesia induction and recovery.
  11. Demonstrate proper care of relative analgesia equipment.
  12. Discuss postoperative challenges of local anesthesia and appropriate patient instructions.

K. Use Dental Cements
   1. Describe cements most commonly used in dentistry and state the primary uses of each.
   2. Describe the types and functions of cavity liners and varnishes.
   3. Describe the manipulation and the uses of polycarboxylate, intermediate restorative material (IRM), ortho-ethoxybenzoic acid (EBA), and glass ionomer cements.
   4. Demonstrate mixing zinc phosphate cement for the cementation.
   5. Demonstrate mixing zinc-oxide-eugenol cement for use as a sedative base.
   6. Demonstrate appropriate care of dental instruments after being used to mix cements.

L. Dental Environmental Hazards
   1. Name and describe the three Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) programs of primary concern to the dental assistant.
   2. Discuss current laws concerning “hazardous waste management,” as they relate to the dental industry.
   3. Describe compliance with OSHA Hazards of Communication Regulations.
   4. Describe the tasks that may be assigned to employees classified as being at risk for occupational exposure to blood or other potentially infectious materials.
   5. Discuss the properties and the uses of these disinfectants: glutaraldehyde, chlorine dioxide, iodophors, synthetic phenol compounds, and sodium hypochlorite.
   6. Explain infection control procedures for dental radiography, impressions, and laboratory cases.
   7. Demonstrate the use of protective attire for dental personnel, including latex gloves, masks, and protective eyewear.
8. Name and describe the two kinds of sterilization most frequently used in the dental office.¹
9. Describe the two major sections of the sterilization area and the flow of instruments as they are cleaned and sterilized.¹
10. Demonstrate the preparation (cleaning and wrapping) of instruments for sterilization by autoclaving and dry heat.¹
11. Practice universal precautions.¹
12. Operate an autoclave.¹
13. Operate an ultrasonic cleaner.¹
14. Sterilize instruments.¹
15. List and describe the major parts of a program to comply with the OSHA Hazards Communication Regulation.¹
16. State the purpose and use of Material Safety Data Sheets (MSDS) and labeling requirements.¹
17. Describe the appropriate handling of acid etch solutions and gels, asbestos, flammable liquids, organic chemicals, gypsum products, formaldehyde, nitrous oxide and oxygen gases, mercury, cast alloys, photographic chemicals, pickling solutions, and visible light-cured materials.¹
18. Describe the appropriate method of discarding these medical wastes in the dental office: sharps, extracted teeth, items contaminated with blood and saliva.
19. Demonstrate and describe the steps to be taken in treating a needle-stick injury.
20. Describe the use of protective barriers in the operatory.¹

M. Oral Health Education and Preventive Dentistry¹
1. State the primary goal of preventive dentistry.¹
2. Demonstrate proper brushing and flossing techniques.¹
3. Describe the use of fluorides in water, fluoride supplements, topical applications, dentifrices, and mouth rinses.¹
4. Describe dental plaque and state its role in causing dental disease.¹
5. Describe instructing a patient in the use of disclosing tablets, the Bass technique of tooth brushing, and the use of dental floss.¹
6. Describe the use of interdental cleanser, Perio-Aid, Stim-u-Dent, oral irrigation devices, therapeutic oral rinses.¹
7. Describe personal oral habits that may compromise general health.¹
8. Discuss plaque control techniques.¹

N. Dental and Medical Emergencies¹
1. Healthcare Provider CPR and First Aid
   a. Explain principles of Cardiopulmonary Resuscitation for adult, child and infant.¹
   b. Discuss the use of Automated External Defibrillator.¹
   c. Apply rescue skills to obtain training or certification in Healthcare Providers CPR.
   d. Explain the process of renewal for Healthcare Providers CPR certification.¹
   e. Apply the knowledge about basic first aid for minor injuries and illnesses.¹
   f. Identify factors that define an emergency.¹
   g. Explain how various illnesses create vulnerability to a potential emergency.¹
   h. Apply skills to obtain training or certification in first aid.¹
2. Maintain current certification in cardiopulmonary resuscitation and first aid.¹
3. Describe the types of emergencies that might be encountered in a dental office.¹
4. Describe the basic staff qualifications for managing medical emergencies.\(^1\)
5. Describe types of supplies that might be found in a minimal emergency kit.\(^1\)
6. Differentiate between administering oxygen and the use of positive-pressure ventilation.\(^1\)
7. State the six basic emergency steps to be taken until help arrives.\(^1\)
8. Describe the emergency treatment for anaphylactic shock, angina pectoris, diabetic acidosis, insulin shock, and an epileptic seizure.\(^1\)

O. **Prepare for a successful job search.**\(^2\)
   1. Develop proper interview skills.\(^2\)
   2. Create a plan for the job search.\(^2\)
   3. Design and create effective job search documents.\(^2\)
   4. Respond to job offers.\(^2\)
   5. Exercise skills in time management.\(^2\)

K. The student will demonstrate employability skills, including dependability, patient/client centered behavior, self-motivation-initiative, positive attitude, and adherence to policies.\(^2\)

\(^1\) ODCTE Objective
\(^2\) TTC required soft skills objective.
All unmarked objectives are TTC instructor developed.

**Teaching Methods:**
The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

**Grading Procedures:**
1. Students are graded on theory and lab practice and performance.
2. The PDA program requires courses to be passed at 70% or better. For secondary students to be eligible for advanced standing in the PDA program, the course must be passed at eighty (80%) or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

**Description of Classroom, Laboratories, and Equipment:**
Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

**Available Certifications/College Credit:**
The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee, Rogers State University or Tulsa Community College. See program counselor for additional information.

**College Credit Eligibility:**
The student must maintain a grade point average of 3.0 or better.