Course Description
This course provides the dental hygiene student with an in-depth study of periodontal disease including the inflammatory process and its relationship to the pathogenesis of periodontal disease; identification of etiological factors; classification of periodontal disease following a complete periodontal assessment; recognition of gingival conditions and risk assessment; description of periodontal surgical procedures; the recognition of periodontal emergencies; and the effectiveness of plaque control and nonsurgical periodontal therapy. Evidence-based decision making and theoretical concepts are integrated for clinical application via case based learning.

Prerequisite(s) Successful completion of the first semester of the dental hygiene program with a grade of “C” or higher in all courses and a cumulative GPA of 2.5 or higher.

Purpose of Course
To prepare students to recognize the signs and etiologies of periodontal disease and to select treatment modalities that minimize risk and promote periodontal health.

Required Materials

Learning Outcomes
The intention is for the student to be able to
1. Discuss the anatomy and physiology of the periodontium and discuss the pathophysiology that occurs when periodontal disease is present.
2. Identify the components of clinical and radiographic assessment and their role in determining a dental hygiene diagnosis.
3. Utilize the dental hygiene diagnosis to determine an individualized treatment plan for a variety of patients.

Course Competencies
Actions that are essential to achieve the learning outcomes:
1. Define terms related to the anatomy and physiology of the periodontium and related structures (C1-6, HP1-5, PC1-13).
2. Describe and compare/contrast the structures found in the four basic periodontal tissue types (C1-6, HP1-5, PC1-13).
3. Explain the mechanism of attachment of epithelium to connective tissue (C1-6, HP1-5, PC1-13).
4. Identify and describe the layers of stratified squamous epithelium and the significance of each layer (C1-6, HP1-5, PC1-13).
5. Compare the types of gingiva, the lamina propria and the submucosa (C1-6, HP1-5, PC1-13).
6. Identify the anatomical landmarks of all intraoral structures (C1-6, HP1-5, PC1-13).
7. Explain the location and purpose for keratinization in the oral cavity (C1-6, HP1-5, PC1-13).
8. List the four components of the periodontium and the functions of each (C1-6, HP1-5, PC1-13).
9. Compare clinical characteristics of health and unhealthy oral tissues (C1-6, HP1-5, PC1-13).
10. Explain the significance of accurate data collection in the diagnosis and treatment of the periodontal patient (C1-6, HP1-5, PC1-13).
11. Discuss the factors that affect the accuracy of probe readings (C1-6, HP1-5, PC1-13).
12. Discuss radiographic changes as periodontal disease progresses (C1-6, HP1-5, PC1-13).
13. Describe the process of determining clinical attachment level (C1-6, HP1-5, PC1-13).
14. Identify the classifications of furcation involvement and mobility (C1-6, HP1-5, PC1-13).
15. Demonstrate accurate probing technique and recording (C1-6, HP1-5, PC1-13).
16. Discuss the measurement and calculation of clinical attachment level (C1-6, HP1-5, PC1-13).
17. Prepare and present a Dental Hygiene Care Plan for a clinical patient (C1-6, HP1-5, PC1-13).
18. Discuss Koch’s Postulates and their relationship to periodontal disease (C1-6, HP1-5, PC1-13).
19. Compare and contrast the nonspecific and specific plaque hypothesis (C1-6, HP1-5, PC1-13).
20. Describe the process of bacterial colonization and plaque maturation (C1-6, HP1-5, PC1-13).
21. Discuss the factors affecting supragingival and subgingival plaque (C1-6, HP1-5, PC1-13).
22. Differentiate between direct and indirect effects of plaque bacteria on the periodontium (C1-6, HP1-5, PC1-13).
23. Compare and contrast the histologic and clinical stages of gingivitis (C1-6, HP1-5, PC1-13).
24. Describe the classes of gingivitis (C1-6, HP1-5, PC1-13).
25. Discuss the characteristics of the AAP Classification of periodontal diseases (C1-6, HP1-5, PC1-13).
26. Describe the risk factors associated with necrotizing periodontal diseases (C1-6, HP1-5, PC1-13).
27. Discuss how hormones can alter the condition of the gingiva (C1-6, HP1-5, PC1-13).
28. Explain the concept of critical mass in the progression of periodontal disease (C1-6, HP1-5, PC1-13).
29. Discuss the rationale for periodontal therapy (C1-6, HP1-5, PC1-13).
30. Describe localized and generalized types of periodontitis in terms of clinical signs and symptoms, onset, primary etiologic factor, primary pathogens, disease activity, treatment and prognosis (C1-6, HP1-5, PC1-13).
31. Discuss factors that lead to the classification of a periodontal disease as “refractory” (C1-6, HP1-5, PC1-13).
32. Compare the histopathogenesis of gingivitis and periodontitis (C1-6, HP1-5, PC1-13).
33. List the characteristics of a periodontal pocket, including clinical features, bacteriologic contents, and treatment (C1-6, HP1-5, PC1-13).
34. Discuss epithelial changes occurring in a periodontal pocket (C1-6, HP1-5, PC1-13).
35. Compare infrabony and suprabony pockets (C1-6, HP1-5, PC1-13).
36. Discuss furcation involvement, including teeth affected, symptoms, treatments, and prognosis (C1-6, HP1-5, PC1-13).
37. Describe bony changes associated with periodontal disease, occlusal trauma, and tension (C1-6, HP1-5, PC1-13).
38. Identify the following on a radiograph: infrabony and suprabony pocket, furcation involvement, bone loss associated with periodontal disease (C1-6, HP1-5, PC1-13).
39. Discuss the current theories of periodontal diseases (C1-6, HP1-5, PC1-13).
40. Compare and contrast the five classifications of immunoglobulins (C1-6, HP1-5, PC1-13).
41. List the components of blood and their function (C1-6, HP1-5, PC1-13).
42. Compare and contrast the origin, maturation, and function of T-cells and B-cells (C1-6, HP1-5, PC1-13).
43. Summarize the four types of hypersensitivity reactions (C1-6, HP1-5, PC1-13).
44. Discuss the process of gingival inflammation and the role the inflammatory system plays in host defense (C1-6, HP1-5, PC1-13).

45. Compare and contrast the role of endotoxins and exotoxins in periodontal disease (C1-6, HP1-5, PC1-13).

46. Discuss the role of host response in causing periodontal destruction (C1-6, HP1-5, PC1-13).

47. Discuss the effects that tetracycline and semi-synthetic analogues have in slowing the progression of periodontal disease (C1-6, HP1-5, PC1-13).

48. Describe the invasion of a foreign body and the immune response (C1-6, HP1-5, PC1-13).

49. Diagram the inflammatory pathway in periodontal disease (C1-6, HP1-5, PC1-13).

50. Explain the primary effect of calculus on periodontal tissues, and its etiologic and clinical significance (C1-6, HP1-5, PC1-13).

51. Compare and contrast supragingival and subgingival calculus (C1-6, HP1-5, PC1-13).

52. Discuss the factors that affect calculus formation (C1-6, HP1-5, PC1-13).

53. Describe the significance of the following local factors on the periodontal tissues: materia alba, food impaction, missing teeth, malocclusion, mouth breathing, tongue thrusting, tobacco, toothbrush trauma, chemical irritation, and radiation (C1-6, HP1-5, PC1-13).

54. Discuss the rationale, objective, and expected results of performing periodontal debridement.

55. Describe the clinical indications and limitations of root planing (C1-6, HP1-5, PC1-13).

56. List the factors which influence the difficulty of removing local factors (C1-6, HP1-5, PC1-13).

57. Compare and contrast traditional and current concepts of root smoothness (C1-6, HP1-5, PC1-13).

58. Discuss the historical and current perspectives regarding the role of irritants in periodontal disease (C1-6, HP1-5, PC1-13).

59. Compare and contrast ultrasonic, sonic, and hand instrumentation in periodontal debridement (C1-6, HP1-5, PC1-13).

60. Describe the rationale for phase treatment planning for the periodontal patient (C1-6, HP1-5, PC1-13).

61. Discuss the rationale for periodontal maintenance (C1-6, HP1-5, PC1-13).

62. Describe the clinical signs of recurrence of disease (C1-6, HP1-5, PC1-13).

63. Discuss host factors that influence the progression of periodontal disease (C1-6, HP1-5, PC1-13).

64. Identify compliance issues that interfere with periodontal health (C1-6, HP1-5, PC1-13).

65. Discuss the purpose of using chemotherapeutic agents (C1-6, HP1-5, PC1-13).

66. Compare and contrast delivery systems, including limitations, indications, and contraindications for each (C1-6, HP1-5, PC1-13).

67. Discuss the general functions of nutrients and their affect on the oral health (C1-6, HP1-5, PC1-13).

68. Explain how hormonal imbalance can affect the periodontium in the following conditions: hyperparathyroidism, diabetes types I and II, puberty, menstruation, pregnancy and oral contraceptives, menopause, and stress (C1-6, HP1-5, PC1-13).

69. Describe the relationship of diabetes mellitus and periodontal disease (C1-6, HP1-5, PC1-13).

70. Discuss the periodontal risk factors for the diabetic patient (C1-6, HP1-5, PC1-13).

71. Explain how the physiologic changes in diabetes predispose the patient to periodontal disease (C1-6, HP1-5, PC1-13).

72. Compare and contrast periodontal health between the nondiabetic and diabetic patient (C1-6, HP1-5, PC1-13).

73. Discuss the effects of blood dyscrasias on the periodontium (C1-6, HP1-5, PC1-13).
74. Describe the dental hygiene considerations for the special considerations/conditions discussed above (C1-6, HP1-5, PC1-13).

75. Describe the clinical characteristics, etiology, and treatment for each of the following periodontal emergencies: Necrotizing periodontal diseases, pericorinitis, acute herpetic gingivostomatitis, periodontal abscess, gingival abscess, endodontic abscess, and periodontal and gingival cysts (C1-6, HP1-5, PC1-13).

76. Discuss the factors to consider in determining the diagnosis and prognosis in the periodontal emergencies listed above (C1-6, HP1-5, PC1-13).

77. Identify each of the above periodontal emergencies by sight or description (C1-6, HP1-5, PC1-13).

78. Discuss the epidemiology of HIV world-wide and in the U.S. (C1-6, HP1-5, PC1-13).

79. Discuss the virology of HIV (C1-6, HP1-5, PC1-13).

80. List the risk factors for HIV (C1-6, HP1-5, PC1-13).

81. Discuss the oral manifestations associated with HIV (C1-6, HP1-5, PC1-13).

82. List the components of the lamina propria

83. Explain the role of connective tissue in the periodontium

84. Recognize the cellular and tissue components of connective tissue and their significance in health and disease

85. Describe the structure and function of the periodontal ligament

86. Interpret the physiologic changes that occur within the PDL related to hyper- and hypo-function

87. Name and illustrate the alignment of and differentiate the function of the periodontal ligament groups

88. Outline indications, outcomes, and contraindications for each of the surgeries listed above (C1-6, HP1-5, PC1-13).

89. Discuss the role of the dental hygienist in implant dentistry (C1-6, HP1-5, PC1-13).

90. Compare and contrast endosseous and subperiosteal implants (C1-6, HP1-5, PC1-13).

91. Explain the importance of the implant maintenance visit (C1-6, HP1-5, PC1-13).

Learning Units

I. Week One:
   a. List and describe components of the periodontium
   b. Differentiate the structure and function of oral epithelium, sulcular epithelium, and junctional epithelium
   c. Explain the epithelial attachment mechanism
   d. Identify the cell turnover rates of oral epithelium and junctional epithelium and its significance in wound healing
   e. Name and differentiate the function of each principal gingival fiber bundle
   f. List the components of the lamina propria
   g. Explain the role of connective tissue in the periodontium
   h. Recognize the cellular and tissue components of connective tissue and their significance in health and disease
   i. Describe the structure and function of the periodontal ligament
   j. Interpret the physiologic changes that occur within the PDL related to hyper- and hypo-function
   k. Name and illustrate the alignment of and differentiate the function of the periodontal ligament groups
II. **Week Two:**
   a. Describe the variables associated with periodontal disease
   b. Define prevalence and incidence as measurements of disease within a population
   c. Discuss historical and current theories associated with the progression of periodontal disease
   d. Describe how clinical dental hygiene practice can be affected by epidemiologic research
   e. Define the terms innocuous, pathogenic, virulent, gram-positive, and gram-negative
   f. Define the term biofilm and explain the advantages to a bacterium of living in a biofilm
   g. Name three examples of biofilms in the environment
   h. Name and describe the components of the biofilm structure
   i. Label the following: bacterial microcolonies, fluid channels, extracellular slime layer, dental pellicle, and tooth surface
   j. Explain the significance of the extracellular slime layer to a bacterial microcolony
   k. Explain the purpose of the fluid channels in a biofilm
   l. Explain why chemicals are not effective in controlling or eliminating biofilms
   m. Define the term dental bacterial plaque
   n. List and describe the four phases in the development of dental plaque biofilm
   o. Define the term bacterial bloom
   p. State the most effective ways to control dental plaque biofilms
   q. Explain why frequent periodontal instrumentation is vital in the control of dental plaque biofilms located within periodontal pockets
   r. Describe how the numbers of bacteria vary from health to disease in the periodontium
   s. Name four microorganisms that have been studied for many years in regard to their associated with periodontal disease
   t. Given a drawing of the subgingival plaque biofilm, label the three zones of bacteria
   u. Name and describe the function of four bacterial virulence factors
   v. Explain to a patient the importance of self-care in the prevention and control of periodontal diseases

III. **Week Three:**
   a. Discuss the body’s immune system and its primary function
   b. Define the term inflammation and discuss events that can trigger an inflammatory response
   c. Name the five classic symptoms of inflammation and explain what events in the tissues result in these classic symptoms
   d. Give an example of a type of injury or infection that would result in inflammation. Describe the symptoms of inflammation that an individual would experience
   e. Compare and contrast acute inflammation and chronic inflammation
   f. Examine the periodontium of a patient with gingivitis and discuss the signs of inflammation that are visible in the tissues
   g. Define the term phagocytosis and describe the steps in this process
   h. Describe the role of macrophages in the immune system
   i. Contrast the terms macrophage and monocyte
   j. Describe the role of B lymphocytes in the immune system
   k. Describe the role of T lymphocytes in the immune system
   l. Describe the three main ways that antibodies participate in the host defense
   m. Define the term inflammatory mediator and name three types of mediators
   n. List the functions of the cytokines in the host response
o. List the functions of the prostaglandins in the host response
p. List the functions of the matrix metalloproteinases (MMP) in the host response
q. Describe the tissue destruction that can be imitated by the immune mediators secreted by immune cells
r. Describe the complement system and explain its principal functions in the immune response
s. Describe the changes that occur in the early bacterial accumulation phase of subclinical gingivitis
t. Describe the changes that occur in the plaque overgrowth phase of established gingivitis
u. Describe the changes that occur in the tissue destruction phase of periodontitis
v. Explain the roles that the bacterial component and host component play in determining whether gingivitis progresses to periodontitis in an individual

IV. Week Four:
   a. Define terms associated with local contributing factors
   b. Identify local etiologic factors that contribute to the retention and accumulation of microbial plaque biofilm
c. Explain the phrase “pathogenicity of plaque biofilm”
d. Identify and differentiate the location, composition, modes of attachment, mechanisms of mineralization, and pathologic potential of supragingival and subgingival calculus deposits
e. Describe four local contributing factors that can lead to direct damage of the periodontium
f. Describe the role of trauma from occlusion as a contributing factor in periodontal disease
g. Describe systemic factors that may modify or amplify the host response to periodontal pathogens
h. Differentiate between Type I diabetes, Type II diabetes, and Gestational diabetes
i. Discuss the implications of diabetes on the periodontium
 j. Define the term osteoporosis and discuss the link between skeletal osteoporosis and alveolar bone loss in the jaw
k. Discuss how hormone alterations may affect the periodontium
l. Define the term pregnancy-associated pyogenic granuloma
m. Explain how abnormalities of PNM leukocytes may affect the body’s response to periodontal pathogens
n. Describe the genetic and physical characteristics of Down Syndrome
o. Discuss the implications of Down syndrome on the periodontium
p. Define the term drug-induced gingival enlargement
q. Name several medications that can cause gingival enlargement

V. Week Five:
   a. Identify and describe the eight categories of Periodontal Disease Classification as outlined by the AAP (Gingival Diseases, Chronic Perio, Aggressive Perio, Perio as a Manifestation of Systemic Disease, Necrotizing Periodontal Disease, Abscesses of the Periodontium, Perio Associated with Endodontic Lesions, Developmental or Acquired Deformities)
b. Identify and describe the four categories of Periodontal Case Types (0, I, II, III, IV)
c. Discuss the significance of probing depths, gingival recession, clinical attachment loss, bleeding on probing, and exudate as they relate to a periodontal diagnosis
d. Discuss the significance of horizontal and vertical bone loss as it relates to a periodontal diagnosis

e. Utilize findings from the medical, dental, clinical, and radiographic findings to determine a patient’s current disease classification

f. Utilize findings from the medical, dental, clinical, and radiographic findings to determine a patient’s current case type

VI. **Week Six:**

a. Classify clinical manifestations as they relate to health or disease of the periodontium

b. Classify radiographic conditions as they relate to health or disease of the periodontium

c. Differentiate between disease severity and disease activity

d. List the components of a comprehensive clinical assessment

e. List the components of a comprehensive radiographic assessment

f. Discuss the significance of probing depths, gingival recession, clinical attachment loss, bleeding on probing, and exudate as they relate to a periodontal diagnosis

g. Discuss the significance of horizontal and vertical bone loss as it relates to a periodontal diagnosis

h. Utilize results of a clinical and radiographic assessment to determine a patient’s current periodontal status

VII. **Week Seven:**

a. Utilize results from the medical history, dental history, and clinical and radiographic assessment to determine the most appropriate treatment plan for periodontally-involved patients

b. Discuss proper sequencing of periodontal treatment and apply it to real-life scenarios

c. Identify the need for periodontal consults and referrals in periodontally-advanced cases

d. Evaluate prepared treatment plans and make suggestions and additions as necessary

VIII. **Week Eight:**

a. Explain the term nonsurgical periodontal therapy

b. Name four goals for NSPT

c. Explain the terms scaling, root planing, periodontal debridement, and deplaquing

d. Describe the type of healing to be expected following successful instrumentation of root surfaces

e. Explain why re-evaluation is a critical step during NSPT

f. Describe the decisions made during the re-evaluation appointment

g. Explain current AAP recommendations for deciding which patients should be managed by a periodontist

h. Discuss the goals of patient self-care and preferred methods for effective plaque control

IX. **Week Nine:**

a. Explain the term periodontal maintenance

b. List three objectives of periodomaintenance

c. Describe how periodomaintenance relates to other phases of periodontal treatment

d. Describe how to establish an appropriate maintenance interval

e. Define the terms recurrence of periodontitis

f. Discuss the characteristics of the most common periodontal emergencies

g. Describe the role of the dental hygienist in management techniques for the most common periodontal emergencies.

X. **Week Ten:**
a. Describe methods of host modulation and their mechanism of action in modifying the host response
b. Discuss how host modulation can be utilized in the management of periodontal diseases
c. Describe the difference between systemic delivery and topical delivery of chemical agents
d. Explain the term systemic antibiotic
e. Explain why systemic antibiotics are not used routinely in the treatment of patients with plaque-associated gingivitis and chronic periodontitis
f. Describe three examples of mouth rinse ingredients that can help reduce the severity of gingivitis
g. Define the term controlled-release delivery device
h. List three antimicrobial agents that can be delivered with controlled-release delivery devices
i. Explain why toothpastes are nearly ideal delivery mechanisms for chemical agents
j. List two toothpaste ingredients that can reduce the severity of gingivitis

XI. Week Eleven:

a. List objectives for periodontal surgery
b. Explain the relative contraindications for periodontal surgery
c. Define the terms repair, reattachment, new attachment, and regeneration
d. Explain the difference between healing by primary intention and healing by secondary intention
e. Explain two methods for classification of periodontal flaps
f. Describe two types of incisions used during periodontal flaps
g. Describe healing following flap for access and open flap debridement
h. Describe the typical outcomes for apically positioned flap with osseous surgery
i. Define the terms ostectomy and osteoconductive
j. Explain the terms autograft, allograft, xenograft, and alloplast
k. Name two types of materials available for bone replacement grafts
l. Explain why a barrier material is used during guided tissue regeneration
m. Explain the term periodontal plastic surgery
n. List two types of crown lengthening surgery
o. Describe the techniques involved with gingivectomy and gingival curettage
p. Explain what is meant by biological enhancement of periodontal surgical outcomes
q. Name two broad categories of materials used for suturing periodontal wounds
r. Explain the term interrupted interdental interdental suture
s. List general guidelines for suture removal
t. Describe the technique for periodontal dressing placement
u. List general guidelines for periodontal dressing management
v. Explain the important topics that should be covered in postsurgical instructions
w. List steps in a typical postsurgical visit
x. Define the term dental implant and describe the components of a typical dental implant and restoration
y. Define the term peri-implant tissues
z. Compare and contrast the periodontium of a natural tooth with the peri-implant tissues
aa. Define the term osseointegration and biomechanical forces as they apply to dental implants
bb. Compare and contrast the terms peri-implant mucositis and peri-implantitis
cc. Discuss the special considerations for periodontal instrumentation of a dental implant
dd. Describe an appropriate maintenance interview for a patient with dental implants
ee. In the clinical setting, select appropriate self-care aids for a patient with dental implants

XII. Week Twelve:
   a. Demonstrate familiarity with the AAP website by completing a powerpoint hand-out that will be distributed to peers on an assigned “controversial” periodontal topic
   b. Prepare a presentation to educate peers and course instructor of the conclusions determined on the assigned topic using evidence-based decision making

XIII. Week Thirteen:
   a. Understand the foundations of tort law and how it applies to the profession of dentistry
   b. Define the term liability as it applies to the provision of periodontal care
   c. Identify situations in the dental office that trigger liability for dental hygienists
   d. Define the terms intentional torts and negligence and give examples of each
   e. In the clinical setting, thoroughly document all periodontal treatment including treatment options, cancellations, patient noncompliance, refusal of treatment, and follow-up telephone calls.
   f. Define the terms insurance codes and insurance form and explain their use in periodontal care

XIV. Week Fourteen:
   a. Describe some strategies in the management of periodontal patients that may evolve in the future

XV. Week Fifteen:
   a. Apply all concepts/procedures/skills discussed thus far in the DHT108 course to prepare a Case Study report that highlights assessment findings, treatment planning recommendations, and treatment recommendations for a clinical patient
   b. Prepare a Case Study presentation that will be provided to peers and the course instructor using appropriate audiovisual equipment
   c. Demonstrate familiarity with all concepts discussed this far in the DHT108 to actively participate in the review session designed to prepare students for the DHT108 Final Exam

Method of Delivery/Instruction
☑ Face-to-face ☐ Blended ☐ Online

Learning activities will be assigned within and outside the classroom to assist the student to achieve the intended learning outcomes through lecture, Instructor-led class discussion, guest speakers, group activities, lab, drills/skill practice, and others at the discretion of the instructor.

Method of Grading and Evaluation

The student will be graded on learning activities and assessment tasks. Grade determinants may include the following: daily work, quizzes, chapter or unit tests, comprehensive examinations, student projects, student presentations, class participation, and other methods of evaluation employed at the discretion of the instructor.