

INTERDISCIPLINARY (IDC) AND
OTHER COURSE
SYLLABI

BUIDRE

2010-2011

OB 761: Oral Microbiology

Course Instructor: Dr. Christopher V. Hughes

Office Hours: Via email from Boston

Credit Hours: 0.7

Prerequisites: Participants in this course must be postdoctoral residents whose department chairpersons have given prior approval.

Co-Requisites: N/A

Course Description: Considerable research has revealed the important role that oral microorganisms play in the initiation and progression of many oral diseases. The mouth is also an exceptional example of a complex microbial ecosystem. These microbes and their by products have been shown to play a key etiologic role in carious lesions, periodontal and endodontic lesions and other types of oral infection. Many of the basic principles that have been discovered by oral microbiologists have applications in other medically related areas of study.

This course will describe the complex microbial ecology of the mouth, the microorganisms that live there, the organisms responsible for oral infections and their proposed pathogenic mechanisms. Their relationship with their human host including interactions with host defense systems will also be considered. General principles of microbiology and ecology will be emphasized as they related to the microflora of the mouth.

The course will be presented as 10 one-hour lectures outlining major areas of oral microbiology.

Intended Learning Outcome: Residents will be able to identify, discuss, and treat the microbiological basis of oral disease.

Course Topics and Content:

Lecture #1 - Oral Microbiology; Introduction. Dr. Hughes

Reading Assignment: Schonfeld, SE. 1992. Oral Microbial Ecology, Chapter 16. From Contemporary Oral Microbiology and Immunology. Eds. J. Slots and MA Taubman. Mosby, New York, pp. 267-274.

Lecture #2 - Determinants of oral bacterial colonization: Adherence. Dr. Hughes

Reading Assignment: Gibbons RJ. Role of adhesion in microbial colonization of host tissues: a contribution of oral microbiology. Journal of Dental Research. 75(3):866-70, 1996

Lecture #3 - Determinants of oral bacterial colonization: Growth and nutritional requirements. Dr. Hughes

Reading Assignment: Van der Hoeven, J. The ecology of dental plaque: the role of nutrients in the control of the oral microflora. From Oral Biofilms and plaque formation. Eds. Busscher and Evans. Harwood Academic Publishers. Amsterdam. 1999.

Lecture #4 - Plaque formation. Dr. Hughes

Reading Assignment: Rosan B. . 1992. Mechanisms of Oral Bacterial Colonization, Chapter 18 From Contemporary Oral Microbiology and Immunology. Eds. J. Slots and MA Taubman. Mosby, New York, pp. 283-298.

Lecture #5 - Dental caries as a microbial disease. Dr. Hughes

Reading Assignment: Caufield PW. 1997. Dental Caries-a transmissible and infectious disease revisited: a position paper. Pediatric Dentistry 19:491-498.

Lecture #6 - The Mutans Streptococci and Human Dental Caries; Dr. Hughes

Reading Assignment: Tanzer JM. 1992. Microbiology of Dental Caries, Chapter 22. From Contemporary Oral Microbiology and Immunology. Eds. J. Slots and MA Taubman. Mosby, New York.

Lecture #7 - Microbial Management of Dental Caries; Dr. Hughes

Reading Assignment: (1) Taubman MA. 1992. Immunological Aspects of Dental Caries, Chapter 29. From Contemporary Oral Microbiology and Immunology. Eds. J. Slots and MA Taubman. Mosby New York (2) Gregory RL. 1994. Dental Caries Vaccine: Science and status. Compendium Cont.Ed. Dent.15: 1282-1291.

Lecture #8 - Periodontal Disease-Microbial aspects. Dr. Socransky

Reading Assignment: Socransky SS and Haferjee AD. 1993. The bacterial etiology of destructive periodontal disease: Current Concepts. J Periodontol 63:322-331.

Lecture #9 - Endodontic Infections; Dr. Hughes

Reading Assignment: Stashenko P. Teles R. D'Souza R. Periapical inflammatory responses and their modulation. Critical Reviews in Oral Biology & Medicine 9(4):498-521

Lecture #10 - Microbial Diagnostics. Dr. Anne Tanner, Forsyth Institute.

Reading Assignments: TBA

Assignments and Due Dates: Reading assignments as above are due before each associated lecture.

Methods and Dates of Resident Evaluations: Attendance will be taken at each lecture. Attendance at 8 of the 10 scheduled lectures is a course requirement.

A single examination, given at the end of the course will be used to evaluate the resident's mastery of the material. The examination will include both material provided in lecture (60%) and in assigned readings (40%). Final grade for postdoctoral clinical residents will be based on the results of the examination (80%) and attendance (20%).

The final exam will test the resident's mastery of the following topics:

- General ecological concepts relevant to the mouth
- Nature of the oral flora
- Significance of adherence and growth for bacterial colonization of the mouth
- Plaque formation and composition
- Microbial etiology of dental caries
- Virulence properties of the Mutans Streptococci
- Microbial approaches to managing Dental Caries
- Description of the gingival crevice flora
- Microbiology and etiology of gingivitis
- Microbiology and etiology of adult and juvenile periodontitis
- Endodontic infections
- Virulence studies of oral pathogens

Teaching and Learning Methodologies: Online lectures and handouts.

Course Text, Recommended Reading, Material, and Resources:

Textbook: Contemporary Oral Microbiology and Immunology. Eds. J. Slots and MA Taubman, Mosby, New York, 1992.

OB 763: Basic Processes in Oral Biology

Course Instructor: Dr. Yoshiyuki Mochida

Office Hours: Via email from Boston

Credit Hours: 2 /2.6

Prerequisites: Residents should have either a D.D.S. or equivalent degree

Co-Requisites: N/A

Course Description: The Basic Processes and Oral Biology course is now online course residents meet only for Introduction, Quizzes and Exams.

Basic Processes in Oral Biology examine biological processes at the cellular and molecular levels. Provides a basis to understand the events that regulate inflammation; wound healing; bone formation and resorption; salivary proteins and physiology; tooth development, eruption, and movement; and fluoride action.

Intended Learning Outcome: Residents will be able to identify and discuss and treat the biological basis of oral disease.

Course Topics and Content: The Basic Processes in Oral Biology is an online course. See attached schedule.

Assignments and Due Dates: See attached schedule.

Methods and Dates of Resident Evaluations: The course has a total of 6 quizzes and 3 exams throughout the 1st and 2nd semester. This course also has a total of 6 Question and Review sessions, which generally will be held on a Monday from 12 – 1 p.m. throughout the course.

Teaching and Learning Methodologies: On-line lectures, quizzes and exams are given in class at BUIDRE.

Course Text, Recommended Reading, Material, and Resources:

The Basic Processes in Oral Biology is now an online course this website is <http://courseinfo.bu.edu/>. All handouts are accessed online.

BASIC PROCESSES IN ORAL BIOLOGY

All quizzes will be held from 8:30-9:00 a.m.

All exams will be held from 8:00 – 10:00 a.m.

DATE SUBJECT

Sept. 12 Introduction to BPOB

Sept.12 Growth Factors and Cytokines

Sept. 19 Connective Tissue Synthesis & Structure Part A

Sept. 26 Connective Tissue Turnover Part B

Oct. 1 Question and Review Session covering handouts Sept. 12th- 26th on-line with course director

Quiz October 3rd covering handouts September 12th- 26th

Oct. 3 Differentiation

Oct. 10 Regulation of Bone Formation

Oct. 17 Bone Mineralization/Calcium Metabolism

Quiz October 24th covering handouts October 3rd - 17th

Oct. 24 Regulation of Bone Resorption

Oct. 31 Basis of Tooth Movement

Nov. 7 Growth Factors-Periodontal Regeneration

Nov. 14 Tooth Eruption

Nov. 28 Systemic Factors in Alveolar Bone Density

Dec. 3 Question and Review Session covering handouts Oct. 24th – Nov. 28th on-line with course director

Dec. 5 FIRST EXAM

Dec. 5 Effect of Diabetes on Bone

Dec. 12 Cellular Basis of Inflammation

Jan. 9 Leukocyte Adhesion Molecule

Jan. 14 Question and Review Session covering handouts Dec 5th-Jan 9th on-line with course director

Quiz January 16th covering handouts December 5th – January 16th

Jan. 16 Acute Phase Response

Jan. 23 Diabetes and Inflammation

Jan. 30 Tooth/Jaw Development

Feb. 6 Biomaterials and Cellular Behavior

Quiz February 6th covering handouts Jan 23rd, 30th and February 6th

Feb. 13 TMJ Structure and Dysfunction

Feb. 20 Epithelial Cell Biology

Feb. 25 Question and Review Session covering handouts Dec. 5th- Feb. 20th on-line with course director

Feb. 27 SECOND EXAM

Mar. 5 RNA/DNA

Mar. 12 HIV/Genome and AIDS

Mar. 19 Protein Synthesis/Cellular Anatomy

Mar. 24 Question and Review Session covering handouts Mar. 5th-19th on-line with course director

Quiz March 26th covering handouts March 5th - 19th

Mar. 26 Intracellular Signals

Apr. 2 Apoptosis

Apr. 9 Nutrition and Oral Health

Quiz April 16th covering handouts March 26th April 2nd and 9th

Apr. 16 Anti-Microbial action of Salivary Proteins

Apr. 23 Neuronal Control of Salivary Glands

Apr. 30 Enamel-Saliva Interactions and Demineralization

**May. 5 Question and Review Session covering handouts Mar. 5th – Apr. 30th on-line with
course director**

May. 7 THIRD EXAM

OB 767: Oral Immunology

Course Instructor: Dr. Alpdogan Kantarci
kantarci@bu.edu

Office Hours: Via email from Boston

Credit Hours: 1

Prerequisites: Participants in this course are expected to have a basic foundation in biochemistry, cellular physiology, histopathology and microbiology. The course is designed for residents that have postdoctoral (professional school) preparation in oral immunology.

Co-Requisites: N/A

Course Description: The purpose of this course is to present material relative to the subject of oral immunobiology and microbiology. The course will deal with the basics of the immune reaction from a subcellular level to an entire host reaction. It will specifically deal with the immune/microbiologic reactions as they pertain to the etiology and pathogenesis of the periodontic and endodontic disease processes.

Considerable research has been done in the fields of oral microbiology and immunology. It is purpose of this course to relate these findings to the clinical situation with an emphasis on treatment modalities using basic science as an adjunct in delivering clinical care.

It is also the purpose of the course to provide an understanding of disease pathogenesis so that an informed basis of therapy can be recommended.

Intended Learning Outcome: At completion of this course, the resident will:

- Understand the general concepts of the basic cell types of immune system
- Understand the development of immune cells
- Understand how cells are recognized
- Understand how cells recognize foreign substances
- Understand how cells are involved in immunity, B-cells, T-cells
- Understand the immune mechanism and response in inflammation
- Understand the gingival and periodontal immunity
- Understand the historical development of local immune concepts
- Understand the definitions and terminology of immunogenetics
- Understand host defense mechanisms in the oral cavity
- Understand the pathogenesis of dental caries
- Understand the basic biology of the neutrophil in blood and periodontal tissues
- Understand definition and characteristics of prostaglandins
- Understand the characterization of HIV

Course Topics and Content: The format of the course is in-class lecturing. Each class will be 50 minutes long. There will be no review classes; therefore attendance is suggested. See attached schedule for the full details of the course lectures.

Date all dates TBA

Faculty

General Concepts in Immunology and Immunobiology:

Dr. Kantarci

Immunity: general concepts (antigen-antibody), basic cell types of immune system, development of immune cells, how cells are recognized, how cells recognize foreign substances, clonal selection-generation of diverse specificity, immune system and immune response.

Immunoglobulin/Antibody: classes (isotype) and subclasses, how antibody is recognized, techniques.

Conventional Immune Mechanisms

Dr. Leone

Innate immunity, inflammation, antibacterial, antiviral, antiparasitic immunity, complement-mechanisms (classical pathway, alternative pathway), phagocytosis, cytokines in inflammation.

Cellular Aspects of the Immune Response

Dr. Kantarci

Tissues, cells involved in immunity, organization of lymphoid tissues (bone marrow, thymus, lymph nodes, spleen), development of lymphocytes, lymphocyte circulation, CD markers and lymphocyte types, cell receptors and recognition, Immunobiology of T cells, lymphokines and cytokines, regulation of the immune response, cellular interactions in immunity, subsets of T lymphocytes-lymphokines, immunization route, adjuvants and antigen structure, secondary responses.

Diversity of the Immune Response:

Dr. Kawai

B cells and immunoglobulins: generation of diversity in the humoral immune response, review features of immunoglobulin molecules, (basic structure, diversity in structures, constant, variable, and hypervariable regions). How can one generate an essentially infinite number of specificities from a finite genome? Immunoglobulin genes (constant regions, variable regions, somatic rearrangement of immunoglobulin genes), B-cell activation, B-cell differentiation, Immunoglobulin class switching, affinity maturation. T-cells and T-cell receptors: generation of diversity in the cellular immune response, T-cell development, T-cell antigen recognition, T-cell activation. Antigen-presenting cells and the major histocompatibility complex: Antigen-presenting cells, major histocompatibility complex, antigen processing and presentation pathways.

Immune System of Mucosal Surfaces:

Dr. Schulze-Spate

Characteristics and structure of mucosal immune system, development of mucosal immune system, components and functional significance of mucosal immunity.

Immunogenetics and Ontogeny of the Immune System:

Dr. Hasturk

Immunogenetics - definitions and terminology, genetic basis of the immune response, immunogenetics, the major histocompatibility antigens, functional definition of MHC, genetic organization of MHC and molecular structure, antigen processing and peptide binding to MHC, unique features of alloimmunity.

Immune System in Health and Disease:

Dr. Kantarci

Failures of host defense; Tolerance, autoimmunity, and transplantation; Allergy and hypersensitivity; Tumor immunology; Resistance; Immunization and vaccine development; Blocking the immune responses; Immunity and Inflammation

MID-TERM EXAM

Immune Components of the Oral Cavity:

Dr. Smith

Host defense mechanisms in the oral cavity: the challenge, lines of defense, soluble components of innate immunity in the oral cavity, soluble components of adaptive immunity in the oral cavity, salivary microenvironments, biologic functions of IgA antibody, mechanisms by which salivary IgA activity can be diminished, components at the plaque/pellicle/tooth interface.

Immunological Aspects of Periodontal Diseases (1):

Dr. Taubman

General relevance of immune mechanisms to periodontal diseases, periodontal diseases as inflammation, antigen penetration of the gingival barrier, relevance of secretory antibody, potential for immediate hypersensitivity, relationship of immediate hypersensitivity to oral organisms, to the severity of periodontal diseases, possible relationships of delayed hypersensitivity to periodontal diseases, potential roles for T lymphocytes, CD4, CD8, Th1, Th2, lymphokines, cytokines, Periodontal vaccines?

Immunological Aspects of Periodontal Diseases (2):

Dr. Kawai

Prostaglandins: definition and characteristics, prostaglandins and bone biology, prostaglandins and periodontal disease, relation of prostaglandins to immune phenomena, effects of prostaglandins on regulation of the immune response, leukotrienes, other mediators of inflammation including cytokines.

Immunological Aspects of Periodontal Diseases (3):

Dr. Van Dyke

Basic biology of the Polymorphonuclear leukocyte (neutrophil), neutrophils in blood and in periodontal tissues, PMN locomotion, PMN function, phagocytosis, contrast with immune response (surface receptors- vascular traffic signals), selectin, activation, Integrin-ICAM, functions of the neutrophil- consequences of diminished function, neutrophil motility-adhesion molecules and ligands, emigration, circulation, consequences of adhesion, immune response modifiers- Periodontal diseases.

Immunopathobiology of Viral Diseases of Oral Cavity:

Dr. Kantarci

Characterization of HIV, course of retroviral infection, cellular immunology of HIV infection, systemic immunology of HIV infection, oral manifestations of HIV infection, effects of HIV infection on oral immune mechanisms, vaccine approaches and prospects. Candida and immune system.

Immunological Aspects of Dental Caries and Endodontic Lesions (1):

Dr. Taubman

Pathogenesis-specificity of bacterial etiology, critical aspects of colonization (bacteria, saliva, sucrose, other), *in vitro* adherence models - evaluation and inhibition assays, antigens of interest, the "mutans streptococci", *S. mutans* GTF as an immunogen, primate studies, human data, epidemiologic correlations between Ig or antibodies and caries, effects of

hypogammaglobulinemia, conclusions and general overview of prospects for immunologic interference with dental infection, strategies and prospects for the future.

Immunological Aspects of Dental Caries and Endodontic Lesions (2):

Dr. Smith

Immune response to "mutans streptococci" (ontogeny), caries immunization models (rodent and primate), experimental considerations in models, *in vivo* modes of antibody to "mutans streptococci", considerations for a vaccine antigen, crossreactivity, route of antigenic stimulation. Development of dental caries vaccine strategies, the infectious challenge (mutans streptococci), potential immunological intervention in disease process, evidence for significance of antibody in mutans, streptococci colonization/disease, experimental active immunization approaches in animal models, experimental passive immunization approaches.

FINAL EXAMINATION

Methods and Dates of Resident Evaluations: There will be two examinations given during the course, one at the midway point and the other at the completion of the course to test the residents' knowledge of the subject. The format of the examination may be a combination of multiple choice, short answer and essay. These exams will be equally weighed to calculate the final grade. Both exams will be calculated using a bell curve. In addition to the exams, attendance will be taken during each class and will be weighed as 10% contribution towards the final grade.

The residents will be able to assess the course through two mechanisms: 1) course evaluations and 2) faculty evaluations.

Teaching and Learning Methodologies: Online lectures. Exams in class at BUIDRE

Course Text, Recommended Reading, Material, and Resources: Online course documents including the handouts.

Texts:

Immunology: A Short Course (Fifth Edition) Benjamini, Sunshine and Coico.

Immunobiology: The Immune System in Health and Disease (Sixth Edition) Janeway and Travers.

Inflammation: A Review of the Process (Fifth Edition). Trowbridge and Emling.

Additional Reading:

Contemporary Oral Microbiology and Immunology. Slots and Taubman. (In library)

OB 830: Research Writing

Course Instructor: Dr. Cataldo W. Leone
cleone@bu.edu

Office Hours: Via email from Boston

Credit Hours: 0.9

Prerequisites: This course assumes that residents will have familiarity with English and basic principles of writing, including spelling, grammar and sentence structure.

Co-Requisites: N/A

Course Description:

Purpose: This is an interdisciplinary course for graduate and postgraduate residents in the CAGS, MS, DSc and PhD programs of the Goldman School of Dental Medicine and Boston University Institute for Dental Research and Education Dubai. The course consists of 26-28 sessions organized into 13-14 two-hour classes that meet once per week, excluding holidays. Enrollment may be on an elective or required basis depending upon the resident's program of study, as determined by the respective postdoctoral program director or research advisor.

Rationale: The course describes the fundamental concepts and components of scientific reports and proposals. It provides practical instruction in developing such components, with emphasis on literature searches, data management and journal article summarization. The course also identifies ethical issues in research writing and in the responsible conduct of research, with emphasis on research involving human subjects and vertebrate animals. It is designed to complement individualized mentoring that residents receive from faculty research advisors.

Course Policies: Enrollment in this course may be required by the resident's program of study, including accreditation guidelines. However, residents with demonstrated experience in research writing may be eligible for exemption from this course. Eligibility will be determined by the resident's respective postdoctoral program director or research advisor, not by the course director. Any waiver of enrollment in this course must be approved, in writing, by the respective postdoctoral program director or research advisor.

This course is intended to complement, but not replace, the individualized mentoring that residents receive from their respective faculty research advisors. The potential for confusion and conflict is recognized, and considerable effort is made to avoid misadvising residents, usurping research advisors and overburdening course faculty. Towards this end, the course director and associated faculty are neither responsible nor obligated to assist residents with any of the following functions usually associated with research advisors: identifying and designing research projects; providing analytical support (ex. statistical analysis); reading and revising the thesis/dissertation of individual residents; or reviewing abstracts, manuscripts or research

proposals for intramural or extramural submission. However, individual arrangements for out-of-class assistance with any of these functions may be made by mutual agreement among residents, research advisors and course faculty.

With the exception of “open sessions” and religious holidays that may occur on class days, submission of assignments is mandatory and will account for 12% of the final grade.

The schedule of class dates and times is fixed and not usually subject to change. In particular, the final examination will not be rescheduled solely to meet personal needs of residents. Residents who fail to sit for the final exam will receive an incomplete grade for the course, and will be referred for appropriate administrative action. Residents may review the graded final examination with the understanding that it may or may not be returned to residents.

Unforeseeable issues or concerns pertaining to this course that may arise will be solved as equitably as possible. However, the course director reserves the privilege of being the final arbiter in such instances. This includes exceptions to the above policies that may be made in rare instances, at the discretion of the course director.

Intended Learning Outcome: Residents will be able to write an acceptable masters thesis and evaluate the dental literature.

Course Topics and Content:

Goal 1: To introduce the key elements of scientific reports and proposals.

Objectives: Following successful completion of the course residents will be able to:

- Describe the major components of a journal article, thesis/dissertation, and abstract for a professional conference.
- Describe different types of research studies and designs.
- Define sample size and power analysis.
- Identify the major components of an NIH proposal.
- List the main components of a research budget.
- Describe various formats for citing references.

Goal 2: To demonstrate practical applications of strategies involved in developing scientific reports and proposals.

Objectives: Following successful completion of the course residents will be able to:

1. Conduct a literature search on an assigned topic and organize the results using a citation management program.
2. Describe the process involved in generating research ideas and hypotheses.
3. Formulate outlines for writing the Introduction, Methods, Results and Discussion sections of scientific reports and proposals.
4. Organize data using spread sheet and presentation programs.
5. Develop an abstract and title given selected data, methods and background information.

Goal 3: To describe ethical considerations in research and research writing.

Objectives: Following successful completion of the course residents will be able to:

- Define plagiarism, scientific misconduct and conflict of interest, and identify examples.
- Describe the main considerations in the ethical and responsible conduct of research involving human subjects and vertebrate animals.
- Define IRB, describe its role and list the main components of IRB applications.
- Describe the informed consent process for human subject research.
- Define IACUC, describe its role and list the main components of IACUC applications.

Assignments and Due Dates: All assignments are due by the beginning of class on the dates specified. It should be understood that submitted work may be returned to residents for revision and resubmission. Residents may review with the course director and/or associated faculty all assignments after grading, but it should be noted that the final versions of individual assignments may or may not be returned to residents. See attached course schedule.

Methods and Dates of Resident Evaluations: 26-28 hours of class time, either live or on-line, have been scheduled, which consist of 19-21 hours of lecture, 5 hours of seminar, and 2 hours of final examination. It is estimated that successful completion of this course will require an additional 15-25 clock hours of out-of-class independent study (i.e., “homework”).

Grading for this course is criterion-based. Scores in four component areas will determine final grades: 1) timeliness of assignment submission, 2) several short-term assignments, 3) one long-term assignment and 4) the final examination. An attendance score of 0.5 point per one-hour session (for a maximum of 13-14 points) will be automatically given to residents who submit assignments on time. The number and type of short-term assignments may vary from year to year, with each assignment contributing to a cumulative score for this component. The nature of the long-term assignment may also vary yearly. The final examination usually will be scheduled on the date of the last class meeting, and typically will be approximately 2 hours in duration. Although no formal grade will be given for class participation, residents are encouraged to participate in the in-class or on-line discussions.

The various assignments and the final examination will be scored by the course director, with or without assistance from other course instructors. Scores will be based on the quality of the work submitted and will include an assessment of content, clarity and format, as applicable. Content refers to the extent to which the assignment has been adequately completed; clarity refers to the logical construction of the assignment; and format refers to textual considerations for the assignment, such as spelling, grammar and adherence to writing guidelines. For group assignments, all residents within each given group will receive the same score per assignment. In the interest of fairness, due consideration will be given for residents whose native language is not English. In general, scores are not negotiable and will not be changed once they have been assigned. However, exceptions may be made in clear cases of error on the part of the instructor(s). Missing assignments will receive a score of zero points; assignments are considered missing if not turned in by the date due.

A maximum of 100 points for the course can be achieved by residents who complete all assignments, score perfectly on the various assignments and the final exam, and attend all lectures. The scores will be weighted as follows:

<u>Points</u>	<u>Activity/Assignment</u>
12	Promptness of assignment submission (0.5 pts/session x 24); [<u>NOTE</u> : This may vary from 12-14 points]
28	Cumulative Short-term assignments (5-7 assignments of variable scores)
30	Long-term assignment (with optional resubmission to achieve full score)
<u>30</u>	Final examination
100	Total

Final letter grades for the course will be assigned based on the total number of points received by each resident, according to the following scale:

<u>Points</u>	<u>Grade</u>
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
60-69	D
<60	F

Teaching and Learning Methodologies: Online presentations and discussions.

Course Text, Recommended Reading, Material, and Resources:

There is no required text. Residents will be responsible for completing assignments based on material presented in lectures, hand-outs, course notes or material otherwise made accessible through the course web site. Because research writing is often a joint effort among colleagues, some or all of the assignments in any given academic year will be group projects; groups will usually consist of 3-5 residents assigned according to their home department.

Course Schedule

Date	Topic	Instructor	Assignment Due
Sep 6	1. Course Overview, General Concepts and the Component Elements of Research Writing	1. Dr. Leone	
	2. Getting Started: The Research Question and Role of “the Literature”	2. Dr. Leone	
Sep 13	1. Library Services and Literature Searches	1. Ms. Lauren Maggio	*Begin Searches of Assigned Topics (in-class activity)
	2. Literature Searches (continued); Overview of Assignments 1, 2 & 3	2. Ms. Lauren Maggio & Dr. Leone	
Sep 20	1. Human Subjects Research and the IRB	1. Dr. Fish	1) Documentation of BUMC OVID/MEDLINE Account or Application (2 points) 2) Results of Literature Search (4 points) 3) “Discovered” Article (4 points)
	2. Pulling it Together: Citation Management and Writing “the Literature Review”; Overview of Assignments 4 & 5	2. Dr. Leone	
Sep 27	1. Ethics and the Responsible Conduct of Research; Regulatory Considerations in Research	1. Dr. Leone	4) Summary of “Discovered” Journal Article (4 points) 5) “Introduction” Paragraph using the Summarized article(s) (4 points)
	2. Generating and Focusing the Hypothesis/Objective; Testing the Hypothesis/Objective: Components of the Implementation Process; Overview of Assignments 6, 8a & 8b	2. Dr. Leone	
Oct 4	1. Research Study Designs: Epidemiological Studies	1. Dr. Jones	
	2. Writing up the Methods; General Methodologies	2. Dr. Leone	
Oct 11	1. Study Designs and Methodologies (continued): Sampling, Measurements, Reliability & Validity and Choosing Appropriate Methods	1. Dr. Leone	6) Certificate of Completion of the NIH Training Module for Human Subject Studies (6 points)
	2. Open “Office Hour”	2. Dr. Leone	
Oct 18	1. Sample Size Calculations and Power Analysis	1. Dr. Nunn	
	2. Data Analysis: Overview of Statistics	2. Dr. Leone	
Oct 25	1. Data Management and Information Technology Resources	1. Mr. Kachouh	
	2. Data Management (continued): Data Collection and Case Report Forms; Writing up the Results: Tables, Figures and Simple Statistics; Overview of Assignment 7	2. Dr. Leone	
Nov 1	1. Survey Research	1. Dr. Hayes	7) Results (in Figure or Table Format) of Assigned Data (4 points)
	2. Writing up the Results (continued): Data Reduction and Data Presentation; Review of completed assignment 7	2. Dr. Leone	
Nov 8	1. Open “Office Hour”	1. Dr. Leone	*Optional session for group Assignments 8a & b, as needed (in-class activity)
	2. Open “Office Hour”	2. Dr. Leone	
Nov 15	1. Animal Research and the IACUC	1. Dr. Cruikshank	8a) IRB Application (15 points) 8b) IRB Consent Form (15 points)
	2. Writing up the Discussion	2. Dr. Leone	
Nov 22	Thanksgiving Day <i>No Class</i>	--- --- --- --- --- --- -	--- --- --- --- --- --- ---
Nov 29	1. Budgets and Timelines in Research Proposals	1. Dr. Van Dyke	
	2. Funding Mechanisms; Outline of NIH Proposals	2. Dr. Leone	
Dec 6	1. Writing up the Abstract; Formulating the Title; Rewriting and Proofreading	1. Dr. Leone	*Abstract of Assigned Data (in-class activity)
	2. Review Session; Open “Office Hour”	2. Dr. Leone	
Dec 13	1. Final Examination	1. Dr. Leone & Staff	*Revised Version of IRB Application (8a) and Consent Form (8b) (optional; variable)
	2. Final Examination	2. Dr. Leone & Staff	

OS 761: Medical Concerns of the Dental Patient

Course Instructor: Joshua Safer, MD / Dr. Thomas Kilgore
jsafer@bu.edu

Office Hours: on-line via e-mail

Credit Hours: 0.8/0.9

Prerequisites: The dentists in the Medical Concerns of the Dental Patient course should already have taken a course in general medicine. The participants should be prepared to embark on a relatively rapid review.

Co-Requisites: N/A

Course Description: Dental patients may be at risk of other medical conditions and may be receiving therapy that will have a bearing on dental practice. Without an understanding of these medical situations and an ability to communicate intelligently with the patient and/or the patient's physician, it will not be possible to provide high quality dental care.

The Medical Concerns of the Dental Patient course is intended to serve as a review course for residents who have already taking courses in general medical pathophysiology. Upon completion of the Medical Concerns of the Dental Patient course, a dentist should be able to identify the commonest diseases for each human system and understand the current thinking regarding the mechanism of that disease.

Further, the course will include the most common pharmaceutical agents used for each disease and the potential impact on dental care from either the diseases themselves or from the pharmaceutical agents used to treat the diseases.

In practice, the dentist will need to be able to alter dental care as necessary to accommodate specific diseases. In addition, the dentist should have sufficient perspective to correctly consider the commonest diseases that might be manifesting with certain classic signs or symptoms.

The course Medical Concerns of the Dental Patient is a survey course during which the classic human diseases will be reviewed by specialists in their respective fields. The course will meet weekly throughout year. For each major human system, a specialist from the Boston University School of Medicine will discuss highlights of the most common human diseases and the current understanding of the disease mechanisms. In most cases, the lecturers will touch briefly on the main treatment regimens for the diseases.

The Medical Concerns of the Dental Patient course will present the information organized by organ system. Within the study of each organ system, the material will be further subdivided by disease.

Through the course Medical Concerns of the Dental Patient, it is expected that residents will have an opportunity to review basic vocabulary and principles of medical care.

Intended Learning Outcome: Upon completion of the Medical Concerns of the Dental Patient course, a dentist should be able to identify the commonest diseases for each human organ system and understand the current thinking regarding the mechanism of that disease.

Further, the dentist should recognize the most common pharmaceutical agents used for each disease and the potential impact on dental care from either the diseases themselves or from the pharmaceutical agents used to treat the diseases.

Resident Role in the Course: Residents should review the CourseInfo web site where previous year's material is posted. Specifically residents should review the material from the previous year(s) so that they can properly anticipate the subjects to be presented.

How to Learn in the Course: The course is made more difficult than many because the breadth of the subject is so large and the individual subjects will often be quite disconnected from each other. The faculty will attempt to assist the residents in finding focus by labeling learning objectives for each lecture and limiting information taught to classic scenarios.

The required material will be presented in on-line lecture format. Residents will be unable to learn the necessary subject matter without attending lectures.

The volume of material is far too large to be memorized quickly in the period immediately prior to the examination. Rather, the successful residents will have reviewed the material prior to the lectures.

Course Topics and Content: The primary source of information will be the lectures. The instructors will state requirements for their subjects explicitly in class.

Assignments and Due Dates: See Course schedule at the end of this syllabus.

Methods and Dates of Resident Evaluations: Exam questions will be drawn only from lectures and the supplementary material to which certain instructors may direct residents. Examinations will be in class at BUIDRE.

The sole source of evaluation will be multiple-choice examination. It is anticipated that there will be two examinations. The first examination will take place at the end of the first term and will determine 1/3 of the final grade. The second examination will take place at the end of the second term and determine 2/3 of the final grade.

Failure to sit for an exam will result in a failing grade for the exam. Residents who believe they have excused absences for an exam must confirm that fact in advance of the exam. Residents whose absences are not excused will receive F's for failure to appear. Residents who have not

sat for an exam and have not made contact with the course director within 24 hours of the exam will receive F's even if their absences would have been excused.

Scores > 80% A
Scores > 67% B
Scores > 55% pass

The volume of material is large and the time to present it short. The appropriate balance to make the course useful is a subject of constant tuning. To that end, resident comments will be solicited in formal fashion. Comments from residents have been very important in the organization of the course to date.

Additional specific comments on faculty styles, clarity of objectives, and ways to master the material will be very important going forward.

Teaching and Learning Methodologies: The material will be presented in lecture format on-line. The primary source for information will be the lectures. There will be no alternative source for the material.

In light of the volume of material, previous year's slides are posted on CourseInfo. The lectures will expect all residents to have reviewed posted material in advance of class. Residents should be aware of weaknesses in their understanding before class so that they can ask questions in class.

Course Text, Recommended Reading, Material, and Resources: The material will be presented in lecture format. The primary source for information will be the lectures. There will be no alternative source for the material.

Except for Medical Emergencies which will be taught live at BUIDRE, previous year's syllabus material is posted on the BU CourseInfo site for the Dental School.

The volume of material is such that it will be mandatory for residents to review the CourseInfo material for each subject prior to class. The lecturers will expect that residents have reviewed the necessary material and will proceed to lecture at a pace appropriate to that expectation.

In addition, all faculty can be contacted by e-mail for additional clarification of material as needed.

Lecture	TIME	TOPIC	SPEAKER
1	8:00am-9:00am	Diabetes	Dr. E. Sternthal
2	8:00am-9:00am	Thyroid & Adrenal	Dr. S. Lee
3	8:00am-9:00am	Metabolic Bone Disease	Dr. M. Holick
4	8:00am-9:00am	Gastroenterology	Dr. R. Lowe
5	8:00am-9:00am	Correlations	Dr. T. Kilgore
6	8:00am-9:00am	Renal	Dr. J. Bhatia
7	8:00am-9:00am	Cardiology	Dr. S. Bernard
8	8:00am-9:00am	Neurology	Dr. B. McGeeney
9	8:00am-9:00am	Renal	Dr. J. Bhatia
10	8:00am-9:00am	Cardiology	Dr. S. Bernard
11	8:00am-9:00am	Correlations	Dr. T. Kilgore
12	8:00am-9:00am	EXAM	
13	8:00am-9:00am		
14	8:00am-9:00am	Pulmonary	Dr. J. Berk
15	8:00am-9:00am	Infectious Diseases	Dr. P. Carling
16	8:00am-9:00am	Infectious Diseases	Dr. P. Carling
17	8:00am-9:00am	AIDS	Dr. I. Bica
18	8:00am-9:00am	Correlations	Dr. T. Kilgore
19	8:00am-9:00am	Oncology	Dr. K. Malek
20	8:00am-9:00am	Hematology	Dr. K. Malek
21	7:30am-8:30am	Hematology	Dr. K. Malek
22	7:30am-8:30am	Rheumatology	Dr. E. Kissin
23	7:30am-8:30am	Medical Emergencies	Dr. T. Kilgore
24	8:00am-9:00am	Correlations	Dr. T. Kilgore

OS 828: Pain and Anxiety Control

Course Instructor: Dr. Ishwar Bhatia
ibhatia@bu.edu

Office Hours: On-line via e-mail

Credit Hours: 0.9

Prerequisites: This course is designed for the post-doctoral residents who have received training in the various techniques and skills required to manage anxiety and pain in the conscious dental patient at the pre-doctoral level and who have been exposed to the sciences of anatomy, pharmacology and physiology.

Co-Requisites: None

Course Description: The Purpose of this course is to provide the educational opportunity to post doctoral dental residents various techniques and skills to manage the anxiety and pain in conscious patients.

The resident will be exposed to the use of inhalation and intravenous agents in the management of pain and anxiety control.

Intended Learning Outcome: The post-doctoral resident will become proficient in the use of local anesthesia, oral sedative agents and analgesics to alleviate their patient's pain and anxiety concerning their treatment and to manage their post-operative discomfort. This will include courses in local anesthesia, anatomy, physiology and pharmacological methods of controlling anxiety and pain and management of related complications.

Course Topics and Content:

Session 1	INTRO/PAIN PHYSIOLOGY
Session 2	REVIEW OF LOCAL ANESTHESIA
Session 3	HISTORY& PHYSICAL EVALUATION OF PT.
Session 4	HISTORY& PHYSICAL EVALUATION OF PT.
Session 5	NITROUS OXIDE SEDATION
Session 6	ORAL SEDATION
Session 7	MID-TERM EXAMINATION – in class at BUIDRE
Session 8	PARENTERAL SEDATION
Session 9	GENERAL ANESTHESIA
Session 10	MONITORING
Session 11	POST OPERATIVE PAIN CONTROL
Session 12	MEDICAL EMERGENCIES
Session 13	FINAL EXAMINATION – in class at BUIDRE

Assignments and Due Dates: The resident is expected to review all on-line lectures and pass each examination.

Methods and Dates of Resident Evaluations: There will be a mid-term examination (25 questions) and final examination of (50 questions) consisting of multiple-choice and True/False items. The mid-term examination will be given at the end of six lectures and cover the material presented during those lectures. The final examination will be held after the completion of the course and cover the material presented on all topics of the course. The examinations will be comprehensive and will be entirely composed of material, which is presented in the lectures. This examination is not “open book” and is not “take-home”. There will be no “make-up” examination.

The final grades will be based upon the collective performance of mid-term and final examinations including the attendance. The distribution will be as follows:

Mid-term examination	40%
Final examination	60%

Grades will be determined as follows:

90-100%	A
85-89%	B+
80-84%	B
78- 79%	B-
75-77%	C+
70-74%	C
66- 69%	C-
60-65%	D
>60	F

Teaching and Learning Methodologies: On-line lectures and in class examinations

Course Text, Recommended Reading, Material, and Resources: Course handouts and the following Texts

Malamed Stanley F. Sedation. *A guide to patient Management*, 4th ed. Mosby
Jeffrey P.Okeson, *Bell’s Orofacial Pains*, 5th ed. Quintessence Publishing;Inc
Peterson, Ellis, Hupp Tucker, *Oral & Maxillofacial Surgery*, 4th ed. Mosby

OS 831: Head & Neck Anatomy

Course Instructor: Dr. Todd Hoagland

Office Hours: Office hours on-line via e-mail

Credit Hours: 0.9

Prerequisites: Participants in this course must be post-doctoral residents whose department chairperson has given prior approval. It is assumed that the incoming residents already have a complete and working knowledge of the basic anatomy of the body and specifically of the head and neck.

Co-Requisites: None

Course Description: This course has been established to enable the advanced resident to review and then build upon their knowledge of the Gross Anatomy of the Head and Neck, and the relationship of cranial structures to the practice of dentistry.

General subjects: All residents entering this course have already completed an extensive course in Gross Anatomy. Subject matter in this course will concentrate on vasculature and innervation to cranial and oral structures, osteology in the head and neck, development of structures in the head and neck, the tempormandibular joint, fascial spaces and spread of infection in the head and neck, pharynx, larynx and trachea.

General Information

- Course Director: Todd Hoagland, Ph.D., Assistant Professor of Anatomy and Neurobiology, Boston University School of Medicine, Assistant Professor of Oral and Maxillofacial Surgery, Boston University Goldman School of Dental Medicine
- Department Responsible for Course: Department of Anatomy and Neurobiology
- Dates for Course: September - December (to be assigned)
- Lectures will be held on-line. Examinations will be in class at BUIDRE

Intended Learning Outcome: Following the completion of this course the resident should be able to:

- Visualize the osteology underlying all portions of the oral cavity and oropharynx, and palpate prominent bony landmarks in and around the mouth.
- Describe the structure and biomechanics of the tempormandibular joint.
- Discuss the movements possible at the TMJ and the muscles that cause these motions.
- Understand the normal flow, collateral circulation, and locations of the vasculature and lymphatic vessels of the head and neck. Additionally, the resident will be able to locate arterial pathways necessary to control bleeding from all parts of the oral cavity, oropharynx, and face.
- Describe the structural relationships within the maxillary sinus and the infratemporal and pterygopalatine fossae.

- Explain motor and/or sensory components of the trigeminal and facial nerves, and be skilled at predicting locations of nerve lesions given a series of patient symptoms regarding either sensory or motor loss of function.
- Predict the spread of infection from all parts of the oral cavity using knowledge of fascial space locations and interconnectivity.
- Describe the major steps in development of the head, especially as it relates to the oral cavity, palate and face formation.
- Confidently locate injection sites for anesthetics within the oral cavity. Furthermore, a resident should understand the location of important neurovascular structures deep to the mucosa adjacent to these injection sites.
- Discuss the location, innervation, and arterial supply of all salivary glands.
- Predict potential sites of origin of infection or cancer after knowing locations of swollen lymph nodes in the head and neck.

Course Topics and Content:

- Lecture 1.....Introduction & Osteology Review
- Lecture 2.....Temporomandibular joint and muscles that move the mandible
- Lecture 3.....Trigeminal nerve
- Lecture 4.....Maxillary sinus and the infratemporal and pterygopalatine fossae
- Lecture 5.....Vasculature and lymphatic drainage of the head and neck
- Lecture 6.....Review
-**EXAM 1**
- Lecture 7.....Facial nerve
- Lecture 8.....Development of the head and neck
- Lecture 9.....Development of the face and teeth
- Lecture 10.....Fascial spaces in the head & neck
- Lecture 11.....Oral cavity and tongue, and exam review
-**EXAM 2**

Assignments and Due Dates: There are no assignments other than review on-line course material and passing the two examinations.

Methods and Dates of Resident Evaluations: There are two examinations. Each examination can contain true-false, multiple choice, matching and fill in the blank questions. The midterm and final examinations will be equally weighted and worth 50% of the final grade. The final examination will not be a cumulative examination, but will cover all information after the midterm.

The grading scale for this course is as follows:

A	93 - 100%	B-	76 - 80%	D	60 - 63%
A-	90 - 92%	C+	70 - 75%	F	59% and below
B+	86 - 89%	C	67 - 69%		
B	81 - 85%	C-	64 - 67%		

Makeup Examination

If a resident is unable to participate in the examination at the scheduled time because of illness or a legitimate personal reason he or she must e-mail Dr. Hoagland **in advance** to be excused. This notification is an absolute prerequisite for a resident to be allowed to take a makeup examination. The time and format of the makeup examination will be at the discretion of the course director.

Teaching and Learning Methodologies: Online Lectures

Course Text, Recommended Reading, Material, and Resources:

Textbooks (recommended):

- Head & Neck Neuroanatomy, Schuenke, et al.; 1st edition, ISBN-10: 1588904415
- Textbook of Head & Neck Anatomy, Hiatt & Gartner; 3rd edition, ISBN: 0781721660

Atlas (recommended):

- Atlas of Human Anatomy, Netter; 4th edition, ISBN: 1416033858

PA 801: Oral and Maxillofacial Pathology

Course Instructor: Dr. George T. Gallagher
ggalla@bu.edu

Office Hours: Via e-mail

Credit Hours: 2.3

Prerequisites: DMD or equivalent

Co-Requisites: None

Course Description: Welcome to the online course in Oral Pathology. This course will run in the online format after a successful experience with this approach last year. Since the format may be unfamiliar to participants, I urge everybody to review the following guidelines carefully.

Intended Learning Outcomes:

- 1) To enable residents to develop a knowledgeable approach to oral disease with good understanding of mechanisms of disease and impact on clinical course.
- 2) To review diseases in a manner so as to enable clinicians to compare and contrast clinical and radiographic features and engage in a thoughtful and comprehensive approach to differential diagnosis.
- 3) To raise awareness of the natural history of oral disease thereby enabling the clinician to discuss these diseases with patients and to provide guidelines as to when patients need to be referred to appropriate specialists for management.
- 4) To enable clinicians, when appropriate, to manage oral disease.

Course Topics and Content: As course director it falls to me to make final decisions on course content, requirements and grades. Dr. Noonan and I will share the monitoring of the website and the group discussions; either of us or both might respond to questions and provide feedback as the course progresses. Either of us can arrange on request to meet with individuals or groups in person to discuss course activities. Feel free to contact either of us by telephone or email to make an appointment.

Course Overview: A great advantage for all of us is that the course will physically meet only three times: For the Introduction, the Midterm Exam, and the Final Exam. This should simplify scheduling of clinic activities and enable busy residents and faculty to make the most effective use of their time.

A possible disadvantage of this format is that it requires everybody to establish a regular schedule for doing the course readings from the text and for logging into the Course Info web site to engage in case discussions and related activities. To ensure that each participant stays in touch with the course we are using a grading system that will make it essentially impossible to pass the course without regular online participation.

Each week the course will focus on a different overall topic area. Readings will be assigned from the textbook that cover the minimum information each participant will need to get started understanding the week's topic. You should try to complete the week's reading assignment by Friday of any given week. At times the reading assignments might take several hours to complete, so it would be well to avoid falling behind. The page assignments are posted below.

Resident Web Pages: In the Communications area residents have the opportunity to provide personal information that will be available to others in the course. I urge each resident to provide at least some information about your specialty program and previous dental experience so that others might learn a bit about who you are. It is possible to upload a photograph if you wish; this is optional. We will be happy to make a digital photo for any resident to upload to his/her personal page. We instructors have our photos posted also.

Assignments and Due Dates: Course participants will be assigned to one of a number of discussion groups. These groups may be accessed through the Communications button on the Course Info Main Page. You will have access to your own discussion group only, not to other groups. Each week a different member of each group should be assigned (or should volunteer) to be the person who prepares a summary of the group's assessment of the week's case(s). In general, this should consist of a few short paragraphs about the discussion case, including the following:

- Significant findings
- Initial differential diagnosis
- Further data or tests needed
- Use of data to formulate assessment
- Treatment options, with pros and cons

This format may not fit exactly for every discussion case, but should be followed whenever possible. Group members should each review the discussion case(s) posted under the week's assignments and formulate individual assessments. These should be written down in more or less detail in a word processing program. Each group member should then post his/her assessment to the discussion group by pasting it in as a message to the group. Others might then comment on the strengths and weaknesses of previous posts in a constructive way so that the scribe can pull together a representative summary of the group's thinking by Tuesday of the week. The instructors will monitor the posts and score residents on the usefulness of their participation. At the beginning of the new cycle the one or two best summaries will be posted for everybody to read, along with any instructor comments that might be necessary. As a general rule each resident should plan to post to the group discussion forum at least twice for each case exercise, once to provide his/her initial assessment and once to critique and synthesize ideas later.

Weekly Reading Assignments:

Week 1: Pages 50-68: Tooth Disorders I

Week 2: Pages 69-100: Tooth Disorders II

Week 3: Pages 107-124; 131; 539; 557-561: Pulpal/Periapical Lesions

Week 4: Pages 285-90; 300-08; 663-685: Mucosal fragility/ulceration

Week 5: Pages 13-14; 189-97; 213-224: Mucosal infections

Week 6: Pages 253-69; 346-354; 440-43: Trauma & reactive lesions

Week 7: Pages 337-46; 354-70: Epithelial dysplasia & Sq CA

Week 8: Pages 480-90; 510-28; 574-83: Nonsquamous head and neck malignancies

Week 9: Midterm Examination

Week 10: Pages 14-15; 267-76; 325-37; 376-80: Abnormal pigmentation

Week 11: Pages 437-43; 447-76: Submucosal nodules

Week 12: Pages 389-430: Salivary disorders

Week 13: Pages 25-36; 590-610: Cysts of the head and neck

Week 14: Pages 544-52; 563-66; 570-71; 610-37: Jaw Tumors

Week 15: Pages 542-44; 553-57: Bone remodeling disorders

Week 16: Posted case exercises for individual assessment.

Week 17: Final Examination.

Methods and Dates of Resident Evaluations: As members of a self-regulating learned profession invested with a high level of public trust we always strive to learn as much as possible of the information we need to practice our profession at the highest possible level. Nevertheless, grades do help us to focus our attention when there are many conflicting demands on our time. In the past residents have found little difficulty in passing this course when attention is paid to keeping up with the work and devoting reasonable energy to study. On the other hand, we do not hesitate to hold residents to what we deem to be reasonable standards, and a few residents each year are required to spend as much extra time as is necessary for them to achieve proficiency.

The following distribution will be applied to the letter grades:

93-100% - A	77-79% - C+
90-92% - A-	73-76% - C
87-89% - B+	70-72% - C-
83-86% - B	60-69% - D
80-82% - B-	<60% - F

Passing for the course overall is at 70%.

Three course activities will be graded:

- The Final Exam will count for 25% of the overall grade.
- The Midterm Exam will count for 25% of the overall grade.
- The remaining 50% of the grade will come from instructor evaluations of the quality of participants' contributions to the online discussion forum. Each week a score from 1-10 will be assigned with the highest score for postings of the greatest overall usefulness to the group. All of these ratings will be averaged into the residual 50% of the overall grade. The instructor ratings, along with scores for the Midterm and Final, will be posted weekly under "Resident Tools" so that individual residents can confidentially monitor their progress.

At the end of the course individual group members will be invited to email the course director with their confidential rankings of the other group members' contributions throughout the course. These ratings will not contribute to course grades. The ratings will be averaged and the group members recognized by their peers as contributing the most to each group's discussions will be honored with the coveted "Golden Weasel" awards.

Teaching and Learning Methodologies: Residents are recommended to read the essay on "How to Study..." under the "Course Information" Button on the main page. Also included there is a copy of this syllabus. The essay attempts to elucidate the difference between studying to accumulate random facts and learning material for practical use. In this course we hope the emphasis stays squarely on the side of learning for practical use.

Course Text, Recommended Reading, Material, and Resources:

The required text is Oral and Maxillofacial Pathology, Second Edition, by Neville, Damm, Allen and Bouquot. W. B. Saunders Co., Philadelphia, 2002.

This book is up to date and well illustrated; it is an excellent reference source. Since the readings will often include material from several chapters and the references will be by page number, residents will probably find it difficult to use alternative textbooks. The overall topic for each week's reading and case discussion is noted beside the actual page numbers assigned. The resident must bear in mind that not all material offered in the textbook is of equal importance; it is the residents' job to read critically and to strive to separate key information from merely interesting background. One purpose of the discussion groups is to help members do this.

Supplemental information on Oral Pathology topics is provided under the Course Documents button on the main page. Under this heading you will find folders organized by clinical or radiographic presentation, such as "White Lesions", "Periapical Lesions", etc. Within each folder are entries for individual disorders that contain capsule summaries and illustrations, corresponding to an Atlas for this course. The information stored here is another version of what is found in the required reading, so participants need not do both, but the entries in Course Info might be helpful in clarifying an occasional point or providing additional illustrations if such are wanted. Links to outside sources of additional images may be found under "External Links", but residents must carefully control the amount of time spent in such outside surfing.

Course Communications: Many times participants in online courses find that communications between colleagues and faculty are actually better in such a format than during classroom based courses. The online discussion forum provides an opportunity to reflect on problems or questions and to formulate one's statements clearly. In order for this activity to be very useful to all, however, a few rules must be observed:

As with most professional interactions, the object of the discussion forums is to bring to bear a variety of viewpoints toward understanding the issues of a case or cases. It is expected that opinions might differ, but the discourse should be based upon the best scientific information that we have. Assertions and criticisms must remain at a professional, not a personal level.

Contributions to a discussion forum should keep to the matter of oral pathology as much as possible. Personal communications or discussion of tangential issues should be addressed by email directly to those to whom they apply, not posted to the bulletin board.

Questions about the reading materials, about oral diseases, or about issues directly pertaining to the cases are all matters that should be referred first to your discussion forum. Others in the group may choose to offer their opinions and clarifications, and they may thus get credit for useful contribution to the group. Only if such questions seem to stump your group's collective knowledge should they be referred to the instructors, and such questions often are difficult for us to answer, too!

The "General Questions and Answers" forum is for postings of issues or questions that the contributor thinks might be of some interest to anybody in the course; this is the forum accessible to everybody. You should feel free to post questions about the course operations, schedules, goals, etc.; any issue of general interest is suitable for discussion here.

Any general announcements to the course at large from the instructors will be posed on the Main Course Page: everyone should check these announcements immediately upon logging in.

Study Groups: The discussion groups are an important part of the activities of the course, since they offer an opportunity for group members to practice using their Oral Pathology knowledge to assess genuine cases. Groups will be formed with members from different disciplines, much as occurs in actual practice. In Dentistry it is often necessary to seek consultation with other

practitioners or to respond to requests for consultation, so this mode of interaction should be familiar to all.

Broadly speaking, two different types of subject matter are appropriate for group discussion in these forums. Any questions, comments or observations related to oral pathology studies may be brought to the group if there is a reasonable expectation that other group members might be able to provide useful information or if others might be interested in what you have found out about a particular issue. In addition the assigned cases must be summarized and discussed in the groups, and a group summary report must be produced each week.

The discussion groups should be self regulating as much as possible. If group members undertake different tasks, then efforts should be made to insure that such duties are shared by all at various times. The faculty will monitor the discussions and occasionally might contribute, but the groups should find their own answers for the most part. Individuals will receive weekly feedback from the faculty on the effectiveness of their contributions, and groups that do the best will have their case discussions posted for the other groups to review.

PD 832: Growth and Development

Course Instructor:	Dr. Lana Dalbah
Office Hours:	Sunday-Thursday 8am-5pm
Credit Hours:	0.4
Prerequisites:	DMD or equivalent
Co-Requisites:	None

Course Description: This course offers a clinically relevant understanding of craniofacial growth and development for the non-orthodontist. Topics include how malocclusion develops and how growth can be modified during treatment of malocclusion. Attention is focused on normal and abnormal growth and development of the face, the occlusion and the dental arches and includes cleft palate and other craniofacial disorders.

Intended Learning Outcome: The resident will use principles of embryology, growth and development to diagnose and manage clinical problems

Course Topics and Content:

Session 1

Craniofacial growth
-Neonatal period
-Palatal development
Growth movements
Differential growth
-Mandibular growth
-Nasomaxillary complex growth

Session 2

Craniofacial growth theories
Growth rotation
Dental arch development

Session 3

EXAM

Assignments and Due Dates: Course attendance and passing the exam is required

Methods and Dates of Resident Evaluations: The examination will determine the course grade

Teaching and Learning Methodologies: Lecture and discussion

Course Text, Recommended Reading, Material, and Resources:
Course handouts

PE 764: Current Concepts in Periodontology

Course Instructor:	Dr. Bassam Kinaia
Office Hours:	Sunday-Thursday 8am-5pm
Credit Hours:	0.6
Prerequisites:	This course is designed for postgraduate dental residents.
Co-Requisites:	None

Course Description: The purpose of this course is to provide participants with a basic understanding of periodontal disease and current treatment modalities. This will be accomplished with a detailed study of the characteristics of periodontal health and disease as a distinct unit as well as in relationship to the other oral structures and processes. In the first 3 lectures the normal anatomy, physiology and microbiology of the periodontium will be described and compared to the changes that are evident in the periodontitis. The new classification will be introduced and studied in order to give the course participants a thorough knowledge of how to formulate a correct diagnosis and prognosis. The second part of the course will involve current treatment modalities, with particular emphasis on interdisciplinary relationships (periodontics/prosthodontics, periodontics/endodontics, periodontics/orthodontics, implantology).

Intended Learning Outcome:

At the completion of this course, the resident will:

1. Know the normal anatomy, microbiology, and physiology of the periodontal tissues
2. Know the pathologic changes of the periodontium during periodontal disease
3. Know and be able to classify periodontal diseases

Course Topics and Content

- Classification of Periodontal Diseases
- Treatments and Surgical Management of Periodontal Disease
- Current Pharmacological Approach for Periodontal Disease
- Periodontal Microsurgery
- Esthetic Crown Lengthening Procedures/Their Use & Abuse

- The Role of Advanced Implantology Techniques in Treatment Planning
- CT Scan Evaluation
- Sinus Elevation/Bone Grafts
- Perio/Prosthetics Relationships (I)
- Perio/Prosthetics Relationships (II)
 - Dr. Morgano
- FINAL EXAM

Assignments and Due Dates: Residents are required to attend lectures and pass the examination

Methods and Dates of Resident Evaluations: To get credit for the course the participants must pass the final examination at the end of the course. Attendance is mandatory.

Teaching and Learning Methodologies: Lecture and discussion

Course Text, Recommended Reading, Material, and Resources: Handouts given to residents.

PE 817, 818, 819: Seminar: Grand Rounds

Course Instructor: Dr. Serge Dibart

Office Hours: via e-mail

Credit Hours: 0.5/0.5

Prerequisites: All residents engaged in all the postdoctoral programs are eligible to attend. Predoctoral residents and residents may also be present.

Co-Requisites: None

Course Description: Grand Rounds seminars are given once a week under the auspices of the Department of Periodontology. One hour seminars are conducted throughout the year. In this seminar series fully documented patient case histories and examinations are presented. Ideal, actual, and alternate comprehensive treatment plans are discussed. This course is mandatory for periodontic, prosthodontic, endodontic and orthodontic residents in all three years and elective for any resident that wishes to attend. Throughout his/her second year of study, each resident has the opportunity to present once.

Residents are to use the "Protocol for Comprehensive Treatment Planning" as a basis.

Intended Learning Outcome:

At the end of this course the resident will be able to:

diagnose various case types and combinations thereof in a large variety of periodontally affected dentitions.

list and diagnose dental, periodontal, oral pathology and masticatory problems in the comprehensive cases.

Ascertain the general and specific etiology.

Determine all predisposing and promoting factors involved in the disease processes.

Assess the role of the systemic factors as they affect the etiology or treatment.

Assess the effect of occlusal, dental morphologic and habit patterns on the progress of disease.

Evaluate the patient's ability to undergo treatment from a physical, psychological, economic, geographic, logistic, and intellectual point of view.

Determine the patient's needs from both an ideal and a pragmatic point of view.

Determine the extent and nature of the total interdisciplinary cooperation that may be necessary to comprehensively treat the wide variety of case types.

Write, sequence, and coordinate prescriptions that will inform all dental personnel involved in treatment of the exact nature of their role in the total therapeutic plan.

Set out comprehensively planned and finitely sequenced treatment plans for a variety of case types.

Recognize the need for an indicate when amendments to the plans may be necessary.

Utilize available specialized expertise and establish comprehensive treatment plans.

Critically evaluate and select specific periodontal treatment modalities for the treatment of

particular periodontal problems.

Make detailed analysis of and list solutions to the periodontal problems encountered.

Examine and consider all reasonable treatment alternatives for both total and purely periodontal care in a wide variety of complex cases.

Document clinical findings and proposed, actual and viable alternative treatment plans.

Ascertain the specific and general prognosis for individual problems and the total case respectively.

Recognize the need and place for constant re-evaluation and maintenance of patient progress and treatment.

Course Topics and Content: There no specific topics or lectures. Residents or teams of residents will rotate in weekly case presentations and discussion

Assignments and Due Dates:

Protocol

Cases to be presented should be checked out with the course directors three weeks before the presentation.

Cases to be presented should be discussed with clinic preceptors.

Residents should present cases within one-half hour, leaving the other half free for discussion.

Pertinent questions may be asked at any time during the presentation as long as they do not disrupt the presentation.

Discussion will take place after the case presentation has been completed.

Rationales for therapy should, where possible, be defended by reference to pertinent literature.

Slides should be set up for dual projection.

Methods and Dates of Resident Evaluations: Residents are graded accordingly to the attendance and class participation. Please note that attendance includes being on time at 8 am, as doors will be closed so as to not interfere with presentations.

A = 90-100%

B = 80-90%

C = 70-80%

Teaching and Learning Methodologies: Case presentation and discussion

Course Text, Recommended Reading, Material, and Resources:

Pertinent literature reference from journals used in previous seminars is mandatory.

Materials for Case Presentations

1. Well trimmed models-mounted on an articulator
2. Duplicated examination charts
3. Photographic slides and visual aids
4. Photographic slides of clinical status of case
5. Slides of models articulated in Centric Relation and exhibiting dynamic occlusion parameters.
6. Slides of models should include occlusal views.

PE 827: Applied Dental Pharmacology

Course Instructor: Dr. Kasumi Kuse Barouch
kasumi@bu.edu

Office Hours: Via e-mail

Credit Hours: 0.6

Co-Requisites: None

Course Description: The purpose of this course is to review the basic principles of Pharmacology and to apply them to the pharmacotherapeutic regimens in our daily dental practice.

In this course we will learn the Pharmacological issues relevant to dentistry and oral biology. We will focus on Pharmacology associated with symptoms detected in the oral cavity during treatment. These include but are not limited to autoimmune syndrome, HIV, cardiac neurological and metabolic disorders. Medications associated with these conditions and their influence on the oral cavity will be discussed. Total Clock Hours will extend 8 one-hour lectures

Intended Learning Outcome:

At Completion of This Course, The resident will:

- Understand the Principles of Pharmacology.
- Identify patient parameters that would alter the efficacy and toxicity of drug therapy and recommend proper drug therapy modification.
- Identify significant adverse effects of drugs used in dentistry.
- Understand drug interactions.

Course Topics and Content: Topics will be selected based on resident's interest.

Introduction

Basics of Pharmacology

General Principles of Pharmacotherapy

Toxicology

Pharmaceutical Care and Performance Indicators

Pharmacokinetics

Pharmacodynamics

The fundamental action of the drug

The fate of the drug

Oral Analgesics

Antidepressant Drugs

Drugs Used For the Treatment of:

Cardiovascular Disease
GI Disorder
Anemia
Prosthodontics
Ophthalmology
Dermatology
Allergy
Respiratory Disorder
Infectious Disease

Drugs that Affect:

Bleeding
Taste Change
Saliva Flow

Dental Concerns Regarding the Patient Currently Taking:

Antiepileptic Medication
Antihistamine

Dental Local Anesthetics
Sedative agents in Dental Practice
Drug-Drug Interaction
-Food Interaction
-Supplement Interaction

Free Radicals and Antioxidants
Drugs used in Medical Emergencies in Dental Practice

Guest Lectures (planned)

Dr. Robert Shapiro MD (Harvard Medical School)
GI Drugs and their interactions to Drugs in Dentistry
Dr. Noriko Usui MD (Tokyo Jikei Medical School)
Drugs used in remission of Cancer/Leukemia Patient
Dr. Eytan Barouch PhD (Boston University)
Pharmacokinetics in Dental Pharmacology
Dr. Mary Young PhD, Pharmacist (Boston University)
- Issues of Prescription / regulation in the US

Assignments and Due Dates: Attendance and passing the examination is required

Methods and Dates of Resident Evaluations:

Attendance is mandatory.
There will be one examination
Residents will be evaluated on the following factors.
Below 70 will be considered as failing.

Attendance 10 %
Final Exam 90 %
100%

A; 100-92
B; 91-84
C; 83-77
D; 76-71
F; < 70

Teaching and Learning Methodologies: Lecture and class discussion

Course Text, Recommended Reading, Material, and Resources:

- Goodman & Gilman's The Pharmacological Basis of Therapeutics (10th Edition)
- Drug Information Handbook for Dentistry (Lexi-Comp's)
- Handouts will be provided for each appropriate lecture.
- All required reading materials for each lecture would be made available 1 week prior to lecture.

-

PE 880: Seminar: Integration of Periodontology: Restorative and Implant Therapy

Course Instructor:	Dr. Jim Madigan
Office Hours:	Via e-mail
Credit Hours:	0.1/0.2
Prerequisites:	This course is designed for post-graduate dental residents.
Co-Requisites:	None

Course Description: The purpose of this course is to provide participants with the basic knowledge and understanding for a comprehensive multidisciplinary approach to treatment. This will be accomplished by means of an in depth literature review of periodontal/restorative/implant relationships pertinent to comprehensive treatment. The role of appropriate hard and soft tissue management for the establishment of an aesthetic, functional and enduring dentition will be extensively reviewed. The control of the occlusion in the natural dentition in periodontally and non-periodontally involved cases, and in situations of mixed natural tooth and implants supported restoration will be studied. In addition the use of evidenced based treatment modalities to attain treatment goals will be examined and encouraged.

Intended Learning Outcome: Residents will apply the following principles to patient care:

- periodontal/restorative/implant relationships comprehensive multidisciplinary approach to treatment.
- The role of appropriate hard and soft tissue management for the establishment of an aesthetic, functional and enduring dentition
- The control of the occlusion in the natural dentition in periodontally and non-periodontally involved cases
- Planning mixed natural tooth and implants supported restorations

Course Topics and Content:

- Multidisciplinary approach to treatment.
- Hard and soft tissue management
- Control of the occlusion in the natural dentition in periodontally and non-periodontally involved cases.
- Mixed natural tooth and implants supported restoration will be studied.
- Use of evidenced based treatment modalities to attain treatment goals
- Literature review of periodontal/restorative/implant relationships pertinent to comprehensive treatment.

Assignments and Due Dates: Class attendance and participation and literature review presentations are required.

Methods and Dates of Resident Evaluations: Residents' case presentations will determine grade.

ATTENDANCE IS MANDATORY

Teaching and Learning Methodologies: There will be lectures presented by Dr. Madigan during the first semester. In the second semester, periodontic and prosthetic residents will pair to present a perio-prosthetic case they have been working together on. This case presentation should include treatment planning and all clinical documentation that has been done.

Course Text, Recommended Reading, Material, and Resources:

Articles will be provided two weeks before the lectures.

PH 741: Behavioral Sciences

Course Instructor:	Manal El Halabi manal.halabi@budubi.ae
Office Hours:	Sunday-Thursday 8 am -5pm
Credit Hours:	0.4
Prerequisites:	N/A
Co-Requisites:	N/A

Course Description: Historically, the primary emphasis, in dental training has been devoted to acquiring a scientific knowledge base and practicing the technical aspects of dental diagnosis and treatment. However, relatively little consistent attention has been given to acquiring and developing the necessary knowledge and skills to understand and attend to the psychological and emotional needs of patients as well as practitioners.

To give a single definition of behavioral sciences that encompasses its many branches is difficult: behavioral science consists of many disciplines that include biology, psychology, anthropology, sociology, economics, ethics and communication all closely associated together. Within all these disciplines one focus tends to be common: each ultimately attempts to explain people's behavior. Behavioral sciences in dentistry may be defined as the study to understand or explain the behavior of people in relation to oral health.

To focus exclusively on one biological, psychological, or sociological area while neglecting others, leads to a narrow—and fundamentally mistaken viewpoint.

This course will introduce and later follow the specific bio-psychosocial model of health practice. This theoretical model emphasizes the importance of understanding behavior and illness from a general systems perspective where multiple biological, psychological and social systems can interact and influence each other.

Intended Learning Outcome: Upon completion of the PH 741 Behavioral Science course, each individual resident will:

1. Be able to identify biological, sociological and psychological variables that lead to certain health related behaviors.
2. Be able to formulate bio-psychosocial interventions for health promotion and disease prevention in dentistry.
3. Be able to identify the characteristics, strengths and weaknesses of various health related behavior modification theories/models.
4. Be able to understand and follow the behavioral aspects of prevention and healthcare policy.

Course Topics and Content:

Session 1	Intro Traditional Biomedical Model Role of Behavior in Preventive Healthcare Policy
Session 2	Bio-psychosocial Model of Illness/Prevention Case (KEY on Courseinfo) website)
Session 3	Behavior Modification Models Substance Abuse Case
Session 4	Adult Behavior: Fear & Stress (Patient and Dentist) Newspaper Article
Session 5	Illness Related Behavior (Patient and Dentist) Special Needs Patients
Session 6	Final Written Exam OR Hand in Final Paper

Assignments and Due Dates: In this course, you have the option of selecting between 2 choices to fulfill your final examination requirement. You may either choose to take a written examination on the final day of the course or you may choose to hand in a paper for your final examination.

If you select the final paper option, you are asked to identify a behaviorally related dental problem/issue with respect to patients or dental practitioners/personnel (i.e. dentists, hygienists, assistants, office staff).

The behavioral model that you are asked to utilize for this paper is the Bio-psychosocial model of illness (BPS). The variables that you will find pertinent in identifying the behavioral problem should be categorized into the three (3) dimensions of this model (i.e. biological, psychological and sociological).

Remember, you are being asked to identify the bio-psychosocial variables involved in the problem in order to help you better understand the intricacies and complexities in human behavior, especially in the dental context/environment. Once the bio-psychosocial variables are identified in this model, a reasonable behavioral solution/intervention should be identified and discussed in the paper.

The bio-psychosocial framework and the grading scale for your final paper should be as follows:

- Identify the problem: (15 points)
Be very specific about the problem that you have selected – describe it carefully. This is either a problem/issue that was previously observed by you or previously thought about.

- Provide your thoughts on how the biological, psychological (behavioral) and social experiences/processes are implicated in the problem.
Address this segment by identifying the following:
 - a) *development* of the problem (15 points)
 - b) *course* of the problem (15 points)
 - c) *outcome* of the problem (15 points)
- By integrating the biological, behavioral and social variables, identify all possible interventions with respect to the management of the identified problem. (10 points)
Any activity that you propose to be placed in this framework to address the problem becomes an intervention by definition, based on the Bio-psychosocial Model of Illness.

This paper MUST:

1. Be typed and double-spaced.
2. Be no longer than 3 pages.
3. Be grammatically correct and coherent.
4. Be handed in on the last day of the course.

10 points will be deducted from any late paper.

Methods and Dates of Resident Evaluations: Attendance is mandatory and is worth 5 pts per lecture. Your final grade will be calculated based on the following:

<u>Attendance in lectures</u>	<u>30%</u>
Final Exam (Written <u>or</u> Paper)	70%

This course utilizes a criterion-reference method for determining grades. The following points correspond with the following letter grades.

A	=	95-100
A-	=	90-94
B+	=	87-89
B	=	84-86
B-	=	80-83
C+	=	77-79
C	=	74-76
C-	=	70-73
D	=	65-69
F	=	< 64

The letter grade reflects a resident's point total achieved, independent of how other residents in the class have performed.

Teaching and Learning Methodologies: You will be respected and treated as colleagues at all times. In return, you will be held to the same standards of professionalism and conduct. Any cheating, deceptive or disruptive behavior will be considered a deviation from the expected professional conduct. It will be at the discretion of the Course Director to decide appropriate action for individuals who do not wish to conduct themselves professionally in this course.

Course Text, Recommended Reading, Material, and Resources:

Due to the integrated nature of the course, we will not utilize a textbook. The following resources are listed for optional reading.

1. Behavioural Sciences for Dentistry
Gerry Humphries, Margaret S. Ling, Harcourt Publishers Limited 2000
2. Human Behavior- An introduction for medical residents
Alan Stoudemire, Lippincott-Raven, Third edition 1998
3. Communication in Healthcare- A skills-based approach
Henry A. Minardi, Martin J. Riley, Butterworth Heinemann 1997

PH 763: Bioethics & Law

Course Instructor: Catherine Sarkis, JD, MBA/ Louise Mckense
csarkis@bu.edu

Office Hours: Via email.

Credit Hours: 0.5

Prerequisites: DMD or equivalent

Co-Requisites: None

Course Description: Bioethics & Law introduces the fundamental principles of biomedical ethics and law to postdoctoral dental residents. Utilizing lectures, case studies and class discussion, the focus is on the ethical and legal aspects of dental practice. Residents will engage in identification and analysis of ethical issues, as well as some legal issues. A variety of topics, including professional responsibility and ethical principles, the relationship between patient and professional, the impact of transmissible disease on the practice of dentistry, and ethical conduct in scientific research will be covered.

Intended Learning Outcome:

At the completion of this course, the resident will:

- discern the meaning of ethics and its relationship to dentistry
- describe the moral underpinnings of the profession and the stages of professional moral development
- describe the fiduciary relationship
- identify and apply sources of ethical norms
- describe an ethical issue in practice
- identify and apply Ozar's Central Values and Model of Ethical Decision Making
- identify the elements of Informed Consent & Refusal
- describe legal liability relating to intentional torts
- describe legal responsibilities relating to privacy laws, patient confidentiality, patient abandonment, and negligence
- describe risk management strategies and record keeping responsibilities
- understand basic principles of law relating to the doctor/patient relationship
- describe ethical and legal responsibilities relating to communicable disease status and disability
- experience discussions of ethical case studies to promote sensitivity and problem solving around ethical issues
- identify and discuss issues relating to ethical conduct in research

Course Topics and Content:

Session 1	Course Introduction Nine Categories of Professional Obligation 4 Models of the Doctor/Patient Relationship
Session 2	NO CLASS - Implantology Symposium Review Ozar's Model of Ethical Decision-Making
Session 3	Ethical Codes ADA Code, Ozar's Central Values, ACD's Core Values
Session 4	Legal Liability: Licensure Contracts & Intentional Torts
Session 5	Legal Liability: Negligence Informed Consent & Refusal, Exceptions to Informed Consent Risk Management Strategies & Record Keeping
Session 6	Communicable Disease, Disability and Dentistry Confidentiality & Privacy Laws FINAL PAPER DUE

Assignments and Due Dates: As above

Methods and Dates of Resident Evaluations: Residents will receive a letter grade for this course, based on the following method of evaluation: Final Paper - 100% of grade
The final paper is due in June at the latest and is a case analysis of ethical and legal issues in practice.

Determination of Grades

This course utilizes a criterion-reference method for determining grades. The following points correspond with the following letter grades and reflect a resident's point total achieved, independent of the performance of other residents in the class.

A	=	95-100	C+	=	77-79
A-	=	90-94	C	=	74-76
B+	=	87-89	C-	=	70-73
B	=	84-86	D	=	65-69
B-	=	80-83	F	=	< 65

Teaching and Learning Methodologies: Lecture and class discussion.

Course Text, Recommended Reading, Material, and Resources:

Handouts

- Available on the course website, <http://courseinfo.bu.edu/>

Reading

- Dental Ethics at Chairside; Professional Principles and Practical Applications, David T. Ozar, PhD and David J. Sokol, DDS, JD, Georgetown University Press, (2002)

Additional References

- Ethical Questions in Dentistry, James T. Rule, DDS, MS and Robert Veatch, PhD (1993)
- Dental Ethics, Bruce D. Weinstein, PhD (1993)
- The Rights of Patients: The Basic ACLU Guide to Patients Rights, George J. Annas, JD, MPH (1989)

PH 800: Introduction to Biostatistics and Epidemiology

Course Instructor:	Dr. Joseph Boffa jboffa@bu.edu
Office Hours:	Via e-mail
Credit Hours:	0.7
Prerequisites:	This course is designed for residents who have no prior experience in Biostatistics and Epidemiology.
Co-Requisites:	None

Course Description: This course is designed to provide the resident with skills in basic concepts of clinical research methods and statistical analysis. The topics covered are basic study designs, i.e., cross sectional studies, longitudinal studies, and true experimental designs. This course is also designed to acquaint the resident with basic data types and summary statistics for the study of disease in human populations. Also covered are concepts of validity, reliability, and the major causes of biased observations when measuring determinants of disease. Emphasis is also placed on preparing the resident to understand the basic statistical tools such as tests of significance required to interpret experimental and observational data. This course is for residents who have not had prior experience with statistics and epidemiology. The Resident is expected to complete all exercises that are part of the assigned chapters in the Self-Instructional Text. The lectures are designed to review the material covered by the exercises. The resident is also encouraged though not required to answer the post-test questions and hand them in to the instructor.

Intended Learning Outcome:

Objective 1 - This Objective is to review basic concepts in statistics including topics such as:

1. Measures of central tendency
2. Measures of dispersion
3. Concept of probability and statistical inference

Objective 2 - This Objective is to cover the role of the normal distribution and sampling as a basis of measuring population parameters. Topics include:

1. Sampling distribution of the mean
2. Level of significance
3. Alpha error
4. Null Hypothesis
5. Confidence intervals

Objective 3 - This Objective is to provide the resident with an overview of the basic type of statistical tests that are commonly encountered in the dental literature. The topics include:

1. Z test
2. The Resident's T test
3. Analysis of variance (ANOVA)
4. Regression and Correlation
5. Chi Square

Objective 4 - This Objective is to review the basic concepts of a well-designed clinical trial. The concepts covered include not only critical design features but also the constraint of limitation of resources and access to appropriate information.

Objective 5 - This Objective is to elucidate the different methods though common goals of clinical medicine versus the non-clinical system of Public Health. The topics include the merging of clinical medicine with the mathematical discipline of statistics. The history of the fluoride issue is reviewed as an example of the application of epidemiologic methods to dental caries.

Objective 6 - This Objectives is to cover the topics of basic measurements of health and disease in society and the basic study types of descriptive versus analytic study designs. Topics covered include:

1. Incidence Rate
2. Prevalence Rate
3. Statistical association vs. causality
4. Measures of risk

Objective 7 - This Objective is to cover the basic types of study designs in examining the distribution of health and disease in society. Topics include:

1. Case - Control Studies
2. Cohort Studies
3. Intervention Studies (Clinical Trials)

Objective 8 - This Objective is to review a relevant work in the literature that helps bring out topics discussed so far in the course.

1. External Validity
2. Internal Validity
3. Sampling Bias
4. Selection Bias
5. Measurement Bias
6. Confounding Bias

Course Topics and Content:

<u>Session Date</u>	<u>Topic</u>	<u>Assignment</u>
Session 1	Overview of Course Data and Tables Frequency Distribution	Chaps. 1,4
	Measures of Central Tendency and Spread Sampling from a Population The Normal Distribution Estimation	Chaps 5,8 9,10
Session 2	Hypothesis Testing The T-Test ANOVA	Chap. 11,14,15
Session 3	Correlation and Regression	Chap. 18
Session 4	Chi Square	Chaps.12,13
Session 5	Study Designs of Human population Part I - Descriptive Rates and Rate Adjustment Sensitivity and Specificity	Chaps 2,3
Session 6	Study Design of Human Population Part II - Analytic Studies Cross-Sectional, Case-Control, Cohort	
Session 7	Statistics of Epidemiology Measures of risk	Chap. 16
Session 8	Experimental Designs & Clinical Trials	Chaps 20, 21
Session 9	Population Hierarchy & Handout Threats to Validity	
Session 10	Final Exam	

Assignments and Due Dates: To be announced in class.

Methods and Dates of Resident Evaluations: The evaluation of resident performance

is based on a final exam where residents are required to answer multiple-choice questions relating to statistical and epidemiological issues. The issues selected for the final exam are similar to problem sets the residents have been required to solve at the end of each assigned chapter of the text. Since the text is self instructional, the lectures are designed to review the material covered by the exercises.

Teaching and Learning Methodologies: Lecture and computer labs

Course Text, Recommended Reading, Material, and Resources:

- BIOSTATS by: Weintraub, Douglass, Gillings. Cavco Publishing
- CourseInfo: All course material is available on B.U.'s CourseInfo Web site. Its URL is: <http://courseinfo.bu.edu/>.
 - Click on the Link then the Goldman School and then PH800.
 - Under "Course Information" is this Syllabus.
 - Under "Course Documents" are available the lecture notes for both Statistics and Epidemiology and all course handouts.
 - Under "Assignments" is listed the problem sets assigned as also given below. All resident assignment answers can be transmitted to the instructor for correction using the e-mail address: jboffa@bu.edu. Correct answers to the problem sets will be e-mailed back to the resident within a week.

PH 803: Biostatistics

Course Instructor:	Dr. Syed Shah
Office Hours:	Via e-mail
Credit Hours:	1.7/2.4
Prerequisites:	A basic understanding of Statistics
Co-Requisites:	None

Course Description: Introduces the concepts and techniques of biostatistics used in dental research and referred to in dental literature. Emphasizes the fundamentals of statistical logic and presents the basic principles of experimental design, statistical inference, and probability. Examples from current basic sciences research, survey research, and clinical trials augment the presentation of statistical theory.

Intended Learning Outcome: The resident will become facile enough in biostatistics to:

- critically analyze the dental literature
- apply statistical methods to his or her thesis

Course Topics and Content:

Summary of course material: Continuous Data Analysis

. Type of data:

- Continuous data
 - Categorical data
 1. Nominal categorical data (e.g. group 1, 2 and 3)
 2. Dichotomous categorical data (e.g. yes, no)
 3. Ordinal categorical data (e.g. low, medium, high)
- 2. Descriptive statistics:
 - For continuous variable: Mean, median, mode, min., max., and standard deviation
 - For categorical variable: Frequency, proportion, and percentage
- 3. Data presentation:
 - Using frequency table, line graph, bar graph, and pie graph
- 4. What is the hypothesis question and which analysis to use?
 - Testing a difference between a mean vs. a specific value (One-sample z-test or t-test)
 - Testing a difference between two means (Two-sample z-test or t-test)
 - Testing a difference among two or more means separated by one categorical variable (One-way ANOVA)

- Testing a difference among two or more means separated by two categorical variables (Two-way ANOVA)
 - Testing a difference among three or more means separated by time (Repeated Measure ANOVA)
 - Testing difference between two means value separated by time (Paired z-test or paired t-test)
 - Interpret the results
5. When to use z-test vs. t-test, or F-test?
 6. How to conclude and interpret the result?
 7. What are Pearson's correlation and Spearman's correlation and what's the difference between them?
 8. How to quantify a relationship between a continuous outcome variable (Y) and independent variable (X)?
 - Simple Regression
 9. Review research articles in dentistry and be able to identify an appropriate statistical analysis

Summary of course material: Categorical Data Analysis

1. Type of data:
 - Categorical data
 4. Nominal categorical data (e.g. group 1, 2 and 3)
 5. Dichotomous categorical data (e.g. yes, no)
 6. Ordinal categorical data (e.g. low, medium, high)
2. Measurement of an association between two categorical variables using:
 - Odds ratio
 - Risk ratio
 - Risk difference
3. Test hypothesis for categorical data:
 - Test for an association between two dichotomous categorical variables using chi-square test or Fisher's exact test
 - Determination of a presence of confounding and interaction
 - Test for an association between two categorical variables using extended chi-square test
 - Testing for a trend between an ordinal variable (e.g. low, medium, high) and another dichotomous variable using a trend analysis
 - Interpretation of the result
4. How to conclude and interpret the result?
5. How to prepare for a new study?
 - Power calculation
 - Sample size determination
6. What's the difference between parametric vs. non-parametric distribution?
 7. How to quantify a relationship between a dichotomous outcome variable (Y) and an independent variable (X)?
 - Logistic Regression

8. Review research article and be able to identify an appropriate statistical analysis

PH 803: Biostatistics

Date Time

Monday, October 18 9:00-12:00 Introduction to Biostatistics

Class 1 Introduction to <http://courseinfo.bu.edu>

Introduction to SPSS

Data entry, Data Transformation

1:00-4:00

Class 2 Descriptive Statistics

1. Continuous data

2. Categorical data

o Nominal categorical data (e.g. group 1, 2 and 3)

o Dichotomous categorical data (e.g. yes, no)

o Ordinal categorical data (e.g. low, medium, high)

Descriptive Statistics for continuous data:

o Mean, median, mode, minimum, and maximum

o Standard deviation

Tuesday, October 19

9:00-12:00

Class 3 Descriptive Statistics for categorical data:

Frequency

Proportion or percentage

Data presentation:

1. Bar graph 2. Box-plot

3. Pie graph 4. Frequency table

Interpret the graphs

Introduction to Normal distribution:

o Z-statistic

1:00-4:00

Class 4 Introduction to Student's t-distribution:

o t-statistics

Introduction to confidence interval:

Confidence interval of a mean value using normal distribution

or t-distribution

Wednesday, October 20

9:00-12:00

Class 5 Continuous Data Analysis:

Testing a mean value of a continuous variable vs. a reference value:

o One Sample t-test or One Sample Z-test

o Interpret the result

Two Random Variable Independent Continuous Data Analysis:

Testing a mean value of a continuous variable vs. a mean value of another continuous variable:

o Two Sample t-test or Two Sample Z-test

o Interpret the result

1:00-4:00

Class 6 One-Way ANOVA:

Testing for means difference among two or more groups separated by one categorical variable:

1. One-Way Analysis of Variance (One-way ANOVA)
2. F-test for one-way ANOVA
3. Multiple comparison
4. Interpret the result

Sunday, October 24 9:00-12:00

Class 7 Two-Way ANOVA:

Testing for means difference among two or more groups separated by two categorical variables:

1. Two-Way Analysis of Variance (Two-way ANOVA)
2. F-test for two-way ANOVA
3. Interpret the result

Monday, October 25

1:00-4:00

Class 8 Repeated Measure ANOVA:

Testing for means difference among three or more groups separated by time:

1. Repeated measure analysis of variance
2. F-test for repeated measure ANOVA
3. Interpret the result

Tuesday, October 26

9:00-12:00

Class 9 Correlation of two continuous random variables:

1. Pearson correlation and Spearman correlation
2. Difference between Pearson correlation and Spearman correlation
3. Show the correlation in a scatter plot
4. Interpret the result

1:00-4:00

Class 10 Regression Analysis:

Method to quantify a relationship between an outcome variable (Y) and an independent variable (X) where:

- o Y is a continuous outcome variable
- o X is a primary predictor of Y
- o X can be either continuous or categorical data
- o Interpret the result

Thursday, October 28

9:00-12:00

Class 11 Review material for the in class final project I

Review on published articles in dental research:

1. Discuss the statistical method presented in the articles
2. Comment

Assignments and Due Dates: Homework will be assigned regularly and the due date will be announced on the courseinfo website. Homework that is a week late will automatically lose 5 points out of 20 points. Homework that is two weeks late will lose 10 points out of 20 points. No later homework will be accepted.

Methods and Dates of Resident Evaluations:

Grading:	Homework:	40%
	In Class Final Project 1:	30%
	In Class Final Project 2:	30%

Teaching and Learning Methodologies: Lecture and computer laboratories.

Course Text, Recommended Reading, Material, and Resources:

Optional Texts:

1. D'Agostino RB, Sullivan LM and Beiser AX. Introductory Applied Biostatistics: 2006 edition
2. Geoffrey GR and Streiner DL. PDQ Statistics, BC Decker: Second edition.
3. Joseph Schmuller, Statistical Analysis with Excel for Dummies

PH 831: Presentation Skills

Course Instructor:	Harold Goodis harold.goodis@budubai.ae
Office Hours:	Sunday-Thursday 8:00 AM- 5:00 PM
Credit Hours:	0.7
Prerequisites:	DMD or equivalent
Co-Requisites:	None

Course Description: One sure mark of a well-educated and successful individual is the ability to effectively communicate with others. Speaking in public is usually found at the top of most people’s list of things they most fear. It is one area, however, professionals are unable to avoid. As well-prepared, educated individuals you will be expected, at various points in your career, to speak in public. Throughout these ten weeks you will be given opportunities to hone and refine you speaking and writing skills.

As a class we are going to work together to further develop our understanding of presentation skills. This course is more than a performance/skills course. Performance is only one component. The other components include lecture, discussion and criticism – all designed to make you more rhetorically competent. Since classical times, good speaking has been seen as a product of knowledge, attitudes and skills.

Intended Learning Outcome: This course will guide you in putting theory and research into practice. Accordingly, we will focus on two principles of public communication: organizing one’s thoughts and words with a specific audience in mind, and presenting those thoughts and words to affect your audience as you - the speaker – intend. Through practice researching, writing and delivering a variety of presentations, you will not only find your public “voice” but you will also learn to critically think on your toes and support your “voice” with concrete arguments.

Course Topics and Content:

Session 1	Introduction – course overview
Session 2	Motivational Techniques for Presentations.
Session 3	Motivational Techniques for Presentations. Presentation # 1 – Group A.
Session 4	Presentation #1 – Group B

Session 5	Delivery/Language/Strategies. Presentation # 2 – Group A
Session 6	Review Organizational Principles for Presentations. Presentation # 2 continued –Group B
Session 7	Presentation # 3
Session 8	Presentation #3
Session 9	Presentation #3
Session 10	Review graphics/visual aids.

Assignments and Due Dates:

- 1.) Attend every class because every meeting is important to your development as a more competent speaker.
- 2.) Treat assigned dates for presentation as professional commitments.
- 3.) Meet all deadlines – no extensions are allowed.
- 4.) Be on time since tardiness is most distracting to both instructor and presenters.

Methods and Dates of Resident Evaluations:

Grades: The approach to grading is incremental, so that as your confidence and experience grows, presentations increase in their grade value.

- 1.) Introductory Speech – explain some aspect of your personality, background, beliefs and aspirations; provide an introduction of yourself to a new community in which you hope to work. 5-7 minutes. 10%
- 2.) Explanatory Speech – describe a process/procedure in your field to patients. 5-7 minutes. 20%
- 3.) Technical Speech – inform your colleagues about an issue in your field. 8-10 minutes. 30%
- 4.) Class participation & attendance. 20%
- 5.) Visual Presentation for #2 & 3. 20%

Teaching and Learning Methodologies: Lectures, resident presentations

Course Text, Recommended Reading, Material, and Resources:

- On Speaking Well - Peggy Noonan
- Frames of Mind – Howard Gardner

PR 761: Occlusion Course Syllabus

Course Instructor:	Dr. Steven Morgano
Office Hours:	Sunday-Thursday 8:00 AM- 5:00 PM
Credit Hours:	1.1
Prerequisites:	DMD or equivalent
Co-Requisites:	None

Course Description: The purpose of this course is to introduce the residents to contemporary concepts of occlusal function, therapy and restoration. Topics covered include:

- The biomechanical principles of occlusion for the natural dentition, including current knowledge relative to mastication and the envelope of function
- Methods and principles of developing artificial occlusions for fixed, removable and implant prosthodontics
- Centric relation as a reference position and as a treatment position
- Complete-mouth rehabilitation of occlusal function with fixed prosthodontics
- Occlusion and temporomandibular disorders (TMD)
- The role of occlusion in the diagnosis and treatment of periodontal disease
- Orthodontic principles of occlusion

Intended Learning Outcome:

At the completion of this course the resident will be:

- Familiar with the results of the studies by Gibbs and Lundeen relative to occlusal function and chewing patterns of the natural dentition
- Able to describe the biomechanical principles of restoring an occlusion with fixed prostheses
- Able to describe the differences between complete denture occlusion and natural occlusion, along with the mechanical principles of developing a functional occlusion for complete dentures
- Able to describe the unique features of implant-supported occlusion, along with methods of developing a functional implant-supported occlusal scheme
- Able to define centric relation and describe how and when this jaw relationship is used in occlusal treatment
- Able to describe the procedures used to completely restore a debilitated dentition with fixed prosthodontics
- Able to relate the role of occlusion to TMD
- Able to describe the role of occlusion in the diagnosis and treatment of periodontal disease

- Able to describe the goal of occlusal treatment with orthodontics

Course Topics and Content:

- Studies by relative to occlusal function and chewing patterns of the natural dentition
- Biomechanical principles of restoring an occlusion with fixed prostheses
- Complete denture occlusion and natural occlusion
- Mechanical principles of developing a functional occlusion for complete dentures
- Features of implant-supported occlusion and methods of developing a functional implant-supported occlusal scheme
- Centric relation - how and when this jaw relationship is used in occlusal treatment
- Restoration of a debilitated dentition with fixed prosthodontics
- The role of occlusion to TMD
- The role of occlusion in the diagnosis and treatment of periodontal disease
- The goal of occlusal treatment with orthodontics

Assignments and Due Dates: Attendance and participation at all lectures is required

Methods and Dates of Resident Evaluations: The final grade for this course will be based on a final examination (80 %) and attendance (20%).

Remediation/Tutorial Policy: Residents who receive an unsatisfactory grade may be given a reexamination after a period of tutorial.

Course Program Evaluation: Residents will be given an evaluation form at the end of the course.

Teaching and Learning Methodologies: Lecture and demonstration

Course Text, Recommended Reading, Material, and Resources:

Required Reading

- Gibbs CH, Lundeen HC. Jaw movements and forces during chewing and swallowing and their clinical significance. In: Advances in occlusion. Boston: John Wright-PSG Inc., 1982:2-32.

Recommended Texts

- Smukler H. Occlusal equilibration in the natural and restored dentition. Chicago: Quintessence, 1990.
- Dawson PE. Evaluation, diagnosis and treatment of occlusal problems. St. Louis: Mosby, 1974.

PR 825: Postdoctoral Biomaterials

Course Instructor: Dr. Russell Giordano

Office Hours: Sunday – Thursday 9:00 am to 4:00 pm

Credit Hours: 1.9

Prerequisites: The resident entering the biomaterials course should have a working knowledge of college physics, chemistry and mathematics. The resident should have successfully completed the predoctoral program at an accredited dental school. Emphasis on the physical sciences provides the best preparation for biomaterials. It is desirable that the resident conducts independent reading in related textbooks and reviews the recent literature. This aspect is important to the success of the course.

Co-Requisites: None

Course Description:

Purpose: It is the purpose of this course to introduce residents to the concept that dental materials assumes an important role in almost every aspect of dentistry. A successful treatment outcome is often dependent on the ability of the restorative material to withstand the rigors of the oral environment. A knowledge of materials science, testing methodology and specific dental materials and their manipulation will be attained through lectures, seminars and self study.

Rationale: There are hundreds of materials available to the dentist, each with their own set of claims with respect to properties and performance. A thorough knowledge of dental materials and their properties is required to select materials for a given clinical situation. An understanding of testing methodology used to determine mechanical and physical properties is extremely important when choosing from the myriad of products available to the dentist. Furthermore, the relationship between microstructure, manipulation, environment and mechanical/physical properties will be examined to enhance the resident's ability to analyze and select materials for a given clinical situation.

Intended Learning Outcome: The objectives of the postdoctoral course are to provide the resident with sufficient knowledge so that he/she is capable of selecting and handling the materials which are required to render satisfactory treatment to the patient. Although the manipulative parameters for obtaining maximum performance are continually stressed, the resident is expected to understand the rationale from which the technical procedures have evolved. Whenever applicable, the research modalities used in mechanical, physical and clinical testing of biomaterials will be highlighted. Only with the development of conceptual thinking can the resident make viable decisions which are required in daily practice when using dental materials.

In order to develop a basic understanding of biocompatibility emphasis will be placed on screening tests and the relationship between the properties of dental materials and their behavior in the oral environment.

The resident will also be required to possess a basic knowledge of the physical properties of dental materials. This will apply to materials which are used in both the oral cavity and in the laboratory.

Material science oriented projects which relate to the class will also be included in the class curriculum. Such projects are used to stimulate ideas and to involve residents in the creative process of discovery.

The resident is required to possess such a basic theoretical knowledge about dental materials so that he or she can apply this knowledge to clinical situations.

The seminars are designed to allow residents to study areas of interest to them. The seminars provide the opportunity to critically evaluate the literature, better understand research methodology and practice lecture presentations. This may be particularly important later in their career when they may be called upon to present to residents and colleagues as "experts" due to their advanced training.

Upon completion of the course the resident is expected to know a material's limitations, advantages and disadvantages. He or she should also be capable of understanding the technical considerations during manipulative procedures. The resident will have a knowledge of material property testing and have the ability to critically evaluate dental materials based upon laboratory and clinical data presented in the literature.

Specific Objectives

Fundamentals of Materials Science

The resident should be able to

- a. Describe the mechanisms of chemical and mechanical bonding.
- b. Label and interpret a Stress-Strain Diagram
- c. Describe mechanisms of fracture growth.
- d. Understand flexural and diametric strength testing, impact testing, hardness and wear testing.
- e. Define thermal expansion and viscosity
- f. Describe principles of electron microscopy and compositional analysis employing x-rays

Composites

The resident should be able to

- a. Define classes of composite resins based on filler particle size and amount.
- b. Relate composition to mechanical and physical properties of strength, hardness, expansion and wear.

- c. Describe the basic chemical composition of the resins and the materials responsible for the setting reaction.

Biocompatibility

The resident should be able to:

- a. List and describe the initial tests required by the ADA and FDA for biocompatibility.
- b. Describe the technique for conducting dentin diffusion biocompatibility testing.
- c. List side effects of specific materials and their components such as acrylic resins, beryllium in metal alloys, amalgam products.

Polymers

The resident should be able to:

- a. List steps of chain growth and polymerization.
- b. Describe how molecular weight and side chain interactions may affect mechanical/physical properties.
- c. Identify components of acrylics responsible for initiation of setting reactions.

Impression Materials

The resident should be able to:

- a. List the components of elastomeric and non-elastic impression materials
- b. Rank the elastic impression materials with respect to stability, elasticity, accuracy, and deformation resistance.
- c. specify certain clinical conditions which may preclude the use of elastomeric or non -elastic impression materials.

Metals

The resident should be able to:

- a. Define the classes of metal alloys and basic crystal structure
- b. Understand the principles of cold working, heat hardening and casting
- b. Rank dental alloys with respect to strength, hardness, castability, cost and ease of use, casting shrinkage
- c. Select specific alloys for a given clinical situation
- d. List major components of noble metal alloys, base metal alloys, stainless steel, titanium

Ceramics

The resident should be able to:

- a. Define a ceramic and describe the general structure and bonding characteristics displayed in ceramics.
- b. Describe stages of ceramic sintering.
- c. Identify and evaluate dental ceramic systems: Metal-ceramics, glass ceramics, infused ceramics, castable ceramics.

- d. Rank dental ceramic systems with respect to strength, translucency, ease of fabrication, longevity.

Machined Restorations

The resident should be able to:

- a. Define the term CAD-CAM and list the major systems available
- b. Compare CAD-CAM to copy milling and list factors which affect accuracy of the machined restorations.

Color

The resident should be able to describe what affects color perception.

- a. How color is measured.
- b. Advantages and disadvantages of conventional shade guides and automatic shade taking devices.

Seminars

The resident should be able to:

- a. Conduct a comprehensive literature search on a given topic.
- b. Summarize the presentation into a lecture notes with references
- c. Critically evaluate materials and literature pertaining to the topic.
- d. Gain experience in public speaking.

Course Topics and Content:

Fundamentals of Materials Science

Chemical/Mechanical Bonding, Surface energy, Wetting, Stress-Strain Diagrams, Fracture mechanisms, Physical and mechanical testing

Composites

Microfill, Macrofill, Hybrid, Chemical Cure and Visible Light Cure

Biocompatibility

Specific ADA and FDA required tests, Alternative and in-vitro testing, Principles of tissue reaction, Possible deleterious effects of materials such as amalgam, acrylics, metals, and ceramics

Polymers

Basic science of polymer fabrication, chain growth, chain structure, mechanical and physical properties of different polymer structures

Impression Materials

Elastomeric: Hydrocolloid, and Alginate Materials; Non-Aqueous: Polysulfide, Silicone, Polyether, Polyurethane, and Urethane Dimethacrylate - Visible Light Cure
Non-elastomeric: Compound, Zinc Oxide - Eugenol

The Structure of Metals

Applications, Composition, Techniques, Strength
Basic science: metal structure, property - structure interactions

Metals for Casting - Precious and Non-Precious, and Their Application
Metal - Ceramic alloys
Titanium
Stainless steel, orthodontic and endodontic metals
Solders

Porcelain

Basic Science: Classification, Composition, Structure and Mechanical Behavior
Metal - ceramic systems
All - ceramic systems
Applications, Composition, Techniques, Strength

Machined Restorations

Dental Office and Lab based CAD/CAM systems

Color/Shade Selection

“Color space” based guides and automatic devices will be reviewed.

The development of ideas toward fabrication of new and improved materials and/or devices will be stressed throughout the course.

Semester 1 Course Schedule

<u>session</u>	<u>Topic</u>	<u>Instructor</u>	<u>Textbook</u>
1	Introduction/Fundamentals I	Dr. Giordano	2,3,4
2	Biocompatibility	Dr. Chou	7
3	Introduction/Fundamentals I	Dr. Giordano	2,3,4
4	Biocompatibility	Dr. Chou	7
5	Fundamentals II	Dr. Giordano	2,3
6	Composite Resins I	Dr. Nathanson	10
7	Polymers	Dr. Pober	6
8	Composite Resins II	Dr. Nathanson	10
9	Ceramics	Dr. Pober	17
10	Ceramics	Dr. Giordano	17
11	Ceramics	Dr. Giordano	17
12	Metals	Dr. Pober	5, 14-16
13	Seminar/Materials Analysis	Dr. Giordano	
14	Exam		

Semester 2 Course Schedule: Lecture/Seminar Series

Session 1	Machinable Ceramic Systems	Dr. Giordano
Session 2	Machinable Ceramic Systems	Dr. Giordano
Session 3	Yankee Dental Congress (No Class)	
Session 4	Machinable Ceramic Systems	Dr. Giordano
Session 5	Color/Shade Selection	Dr. Giordano
Session 6	Color/Shade Selection	Dr. Giordano
Session 7	NO CLASS Prosthodontics/Midwinter Meeting	
Session 8	Quiz 1	
Session 9	RESIDENT SEMINAR	
Session 10	RESIDENT SEMINAR	
Session 11	RESIDENT SEMINAR	
Session 12	RESIDENT SEMINAR	
Session 13	RESIDENT SEMINAR	
Session 14	RESIDENT SEMINAR	
Session 15	RESIDENT SEMINAR	
Session 16	RESIDENT SEMINAR	
Session 17	Quiz# 2	

Second Semester Course & Seminar Schedule

This semester will consist of instructor lectures and presentations by residents on a topic. The following are guidelines for the resident seminar presentation. A list of topics presented in the past is given below. You may select the topic of your choice from this list or suggest a topic not on this list. Please note that the selection of topics is on a first come-first serve basis. Make your choice early.

Presentation:

- Detailed written report including references.
- Powerpoint type slides are recommended.
- Include material from textbooks and Journal articles -literature search of at least the last 5 years.
- Meet with me 1 month before your report to present me with an outline of your topic.

Possible Presentation Topics: These are topics presented in past classes but you may suggest one of your own.

- Impression Materials
- Bioceramics: Hydroxyapatite, Resorbable Glass etc.
- Tissue Matrix Devices/Tissue Engineering
- Lasers
- Caries: Novel prevention and Treatment(Vaccine, Early detection – IR, Laser, Dyes)
- Amalgam and Alternatives(Gallium, Non mercury silver alloy)
- Glass Ionomers
- Dentin Bonding agents
- Theory and Chemistry of Sealants
- Chemistry and Application of Fluorides
- Alloys for Cast Metal and Metal-Ceramic Restorations
- Titanium and Titanium Implants
- Acrylic Resins: Denture base, provisional restorations, appliances
- Luting Agents
- 3D Printing/Solid Free Form Fabrication
- Electro-formed crowns
- Fatigue of Dental Materials
- Wear of Materials
- Post and Core Materials
- Orthodontic bracket materials

Biomaterials Seminar Presentation Guide

In your class seminar, please make sure that you cover all of the areas described below:

1. Structure and Composition of the Materials
 - a. Mechanical properties
 - b. Microstructure - property interactions

2. Fabrication and manipulation
 - a. How is the material made and/or how is it used clinically?
 - b. Technique Sensitivity
 - 1) How are mechanical properties affected by different handling techniques?
3. Longevity - What is the life of this material? What factors influence this life?
4. Biocompatibility
 - a. For the patient
 - b. For clinical personnel
5. Research Documenting the Material's Properties and Effectiveness
6. Selection - Under what clinical circumstances is this material utilized?

In preparing this presentation, you must perform a literature search on your topic over of the last five years and select at least 5 relevant articles. I suggest use of the Medline resources in the library.

Also you should meet with me at least 1 month before your presentation to discuss its contents. Lecture notes outlining your presentation and including relevant references must accompany your seminar.

A separate paper which is essentially a literature review article based on topics covered in your seminar must be submitted the day of your presentation.

Assignments and Due Dates: As outlined above.

Methods and Dates of Resident Evaluations:

Attendance: Attendance is mandatory and will be taken. Although it is not formally part of the final grade, a good attendance record will help improve your final grade.

Grading: Midterm Exam: 30%
Quiz 1: 15%
Quiz 2: 15%
Seminar Presentation: 20%
Seminar Report: 20%

Teaching and Learning Methodologies: Lecture and seminar

Course Text, Recommended Reading, Material, and Resources:

Restorative Dental Materials, Robert G. Craig, Mosby, 11th edition

PR 844: Implantology Literature Review

Course Instructor: Dr. Zhimon Jacobson

Office Hours: Sunday – Thursday 9:00 am to 4:00 pm

Credit Hours: 1.9

Prerequisites: Participants must be Post Doctoral residents

Co-Requisites: None

Course Description: The concept of this course is to learn through reading and group discussion. The participants will be given articles to read a week prior to the discussion. During the class a participant will be chosen by the instructor to review the literature, this requires all participants be prepared to be called upon. The hour will consist of literature review and scientific group discussion. The review and discussion ensures that the articles read are fully understood.

Intended Learning Outcome: At the end of this course residents will be expected to have an in depth knowledge and understanding of the subjects presented in the literature review.

Course Topics and Content:

First Semester

Session	TITLE
1	Treatment Planning
2	Presurgical Evaluation
3	Anatomy
4	Bone Implant Interaction
5	Suture Technique and Materials for Implant Surgery
6	Bone Augmentation Materials for Implant Surgery
7	To Be Announced
8	Partially Edentulous Restorations
9	Single Stage Implants
10	Immediate Placement

11	Immediate Loading
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Second Semester

Session	TITLE
1	Team Approach to Implant Success
2	Sinus Elevation
3	Closed Sinus Elevation
4	Prosthetically Directed Implant
5	A Multi Disciplinary Approach to the Anterior Esthetic Zone Implant
6	Creating the Prosthetic Illusion
7	Evidence-Based Implantology – Factors Governing the Long-Term Survival of Dental Implants
8	Distraction Osseogenesis
9	Abutment Selection
10	Treatment of Ailing and Failing Implants
11	Performance and Serviceability of Restorations
12	Review

Assignments and Due Dates: It is required that the posted literature articles are read in advance of each class.

Methods and Dates of Resident Evaluations:

1. Exam: 50% of grade. The exam will consist of a combination of multiple-choice, true or false, shorts essay, and fill in the blank questions.
2. The remaining 50% of the grade will be determined by attendance and class participation 25%.
3. Grading Scale: Residents will receive an A, B, C, D or F for the class.

- A 95-100
- B 86-94
- C 80-85
- D 75-79
- F 0-74

Teaching and Learning Methodologies: Lecture and literature review discussion

Course Text, Recommended Reading, Material, and Resources:

Articles will be posted online one week prior to the class. Articles will be on-line at <http://courseinfo.bu.edu>

PR 845: Implantology Topics

Course Instructor:	Dr. Zhimon Jacobson
Office Hours:	Sunday – Thursday 9:00-4:00
Credit Hours:	1
Prerequisites:	Participants must be Post Doctoral residents
Co-Requisites:	None

Course Description: The concept of this course is to learn the principles and practice of implant dentistry through reading and group discussion.

Intended Learning Outcome: At the end of this course residents will be expected to have an in depth knowledge and understanding of the subjects presented in the literature review.

Course Content, Assignments and Due Dates:

The participants will be given articles to read a week prior to the discussion. During the class a participant will be prepared to be called upon. The hour will consist of literature review and scientific group discussion. The review and discussion ensures that the articles read are fully understood. This class will meet Mondays 4-5 pm. There will be two exams given, December and April.

Methods and Dates of Resident Evaluations:

Exam: 50% of grade. The exam will consist of a combination of multiple choice, true or false, short essay, and fill in the blank questions.

The remaining 50% of the grade will be determined by attendance 25% and class participation 25%.

Teaching and Learning Methodologies: On-line lectures and in class examinations.

Course Text, Recommended Reading, Material, and Resources:

Articles will be posted online one week prior to the class. Articles will be on-line at <http://courseinfo.bu.edu>

PR 846, 847, 848: Implantology Case Presentation

Course Instructor:	Dr. Mohamad Koutrach
Office Hours:	Monday and Wednesday 1:00 pm to 6:00 pm
Credit Hours	0.2
Prerequisites:	Participants must be Postdoctoral residents.
Co-Requisites:	None

Course Description: The purpose of this course is to share individual experiences of the residents in the surgery room and the prosthetic outcome with fellow residents. The residents will explore alternate treatment possibilities and modalities based on current literature and concepts.

Presenting individual cases will allow the residents to share what challenges they have had, what they learned and by sharing these experiences it will prevent others from making the same mistakes. This format allows the residents to learn from each other's experiences. This is a one-hour class that will meet weekly. The first half of this class is case presentation and the second half will allow for class discussion. In the future this class may be formatted in a debate style.

Intended Learning Outcome: This course will familiarize the residents with different types of implantology cases and patients that are treated in the clinic as well as explore possible options for treatment planning and treatment. By sharing clinical experiences with classmates they will be able to recognize the limitations of different treatment modalities.

Course Topics and Content:

*Residents will choose a case to present.

Assignments and Due Dates:

Methods and Dates of Resident Evaluations: Resident grade will be pass/fail based on class participation, attendance, and knowledge of subject matter.

Teaching and Learning Methodologies: This course will be resident presentation and instructor guided discussion.

Course Text, Recommended Reading, Material, and Resources: N/A

OTHER COURSE SYLLABI

BUIDRE

2010-2011

EN 819: Endodontics for Prosthodontists

Course Instructor:	Dr. Sami Chogle
Office Hours:	Sunday – Thursday 9:00 am to 4:00 pm
Credit Hours:	0.5
Prerequisites:	DMD or equivalent
Co-requisites:	None

Course Description: Series of lectures presented to residents enrolled in the postdoctoral programs in Periodontology and Prosthodontics. Topics include diagnostic procedures in endodontic practice, classification of pulpal and periradicular pathology, management of the endodontic emergency, diagnosis and management of endodontic-periodontic lesions.

Intended Learning Outcomes: The course will result in the prosthodontic resident being able to apply the principles of endodontic diagnosis and treatment to the clinical practice of prosthodontics.

Course Topics and Content:

- Pathophysiology of endodontic disease
- Diagnosis of endodontic disease
- Diagnostic procedures in endodontics
- Classification of endodontic pathology
- Acute management of pulpal pathology
- Principles of management of perio-endo lesions
- Considerations in the restoration of endodontically treated teeth.
- Considerations in endodontic therapy vs. implant therapy

Assignments: There are no specific assignments. Class attendance and participation are mandatory.

Methods of Resident Evaluation: Residents will be graded on class attendance (10%), class participation (15%) and a final examination (75%).

Teaching and Learning Methodologies: Lectures and class discussion.

Course Texts, Recommended Reading, Material and Resources:
Suggested Textbook: Pathways of the Pulp.

OS 866: Orthognathic Surgery

Course Instructor:	Dr. Victor Dietz
Office Hours:	By appointment or via e-mail
Credit Hours:	1
Prerequisites:	DMD or equivalent
Co-requisites:	None

Course Description: A conference for orthodontic residents designed to familiarize residents with the problems associated with the diagnosis and treatment of dentofacial deformities. Stresses orthodontic principles and surgical techniques, and team evaluation.

Intended Learning Outcomes: The orthodontic resident will be competent in the integration of surgical approaches into the orthodontic treatment plan, in communicating with the surgeon and in sequencing the surgical and orthodontic phases of treatment.

Course Topics and Content:

- General principles of case selection for orthognathic surgery.
- Maxillary procedures
- Mandibular procedures
- Segmental procedures and corticotomy
- Distraction procedures
- Sequencing surgery and orthodontics
- Patient selection
- Complications

Assignments: Class attendance and participation are mandatory.

Methods of Resident Evaluation:

Class attendance – 15 points

Class participation – 25 points

3 quizzes – 60 points

Residents are expected to achieve 80 points or better to pass the course.

Teaching and Learning Methodologies: Class lectures, discussion and case evaluation.

Course Texts, Recommended Reading, Material and Resources: Reading assignments TBA.

PR 832: Tempormandibular Disorders and Orofacial Pain

Course Instructor:	Dr. Steven Morgano
Office Hours:	Sunday-Thursday, 9 AM to 5 PM
Credit Hours:	1.4
Prerequisites:	D.M.D., D. D.S. or equivalent
Co-requisites:	None

Course Description: The purpose of this course is to orient postdoctoral residents to the principles of management of patients with orofacial pain. Normal function of the tempormandibular joints (TMJs) and muscles of mastication are reviewed along with basic neurophysiologic processes of pain. Diagnosis and treatment planning of dysfunction of the TMJs and muscle of the head and neck are comprehensively described and related to the history, physical examination, and imaging techniques. Facial pain of muscle origin, including pain as a result of myofascial trigger points and pain arising from the TMJs, is discussed.

Intended Learning Outcomes:

At the completion of this course the postdoctoral resident will:

Know and understand basic anatomy and physiology of the TMJ and muscles of the head and neck.

Be familiar with the symptoms associated with dysfunction of the TMJ and muscles of the head and neck.

Be familiar with the pathophysiology of myofascial pain, trigger points, and referred pain, as well as methods of diagnosis and treatment of myofascial pain.

Know the indications and methods available for imaging of the TMJ, and be able to interpret these images.

Be able to conduct a history and clinical examination for the patient with orofacial pain

Be familiar with fundamental principles of the neurophysiology of pain

Know when an occlusal device is indicated for the management of TMD, and be able to effectively fabricate and adjust an occlusal device.

Be familiar with surgical methods of treatment of intracapsular disorders of the TMJ and joint deformities.

Be aware of the psychological factors that play a role in the management of chronic pain.

Be familiar with some of the more common pharmacological approaches to treatment of orofacial pain and TMD.

Course Topics and Content:

- Anatomy and physiology of the masticatory system
- Myofascial pain
- Symptoms of TMD: Dysfunction of the TMJs

- History, clinical examination, radiographic examination and treatment planning for patients with TMD
- Neurophysiology of head and neck pain
- Occlusal device therapy
- Surgery of the TMJ
- Psychological factors
- The role of the prosthodontist in the treatment of patients with TMD
- Pharmacological options

Schedule:

Feb 9, 2010	Introduction to occlusion, TMD and orofacial pain
Feb 16, 2010	Anatomy and biomechanics of the TMJ
Feb 23, 2010	Etiology of TMD Part I
Mar 2, 2010	Etiology of TMD Part II
Mar 9, 2010	Intracapsular disorders
Mar 16, 2010	Introduction to orofacial pain
Mar 23, 2010	Anatomy and physiology of orofacial pain
Mar 30, 2010	Pain concepts and pain modulation
Apr 6, 2010	Referred pain
Apr 13, 2010	History and examination of the patient
Apr 20, 2010	Keys to differential diagnosis
Apr 27, 2010	Use of diagnostic and therapeutic injections Part I
May 4, 2010	Use of diagnostic and therapeutic injections Part II
May 11, 2010	Classification of orofacial pain
May 18, 2010	Masticatory muscle disorders Part I
May 25, 2010	Masticatory muscle disorders Part II
June 1, 2010	Occlusal devices Part I
June 8, 2010	Occlusal devices Part II

June 15, 2010	Occlusal devices Part III
June 22, 2010	Review
June 30, 2010	Final examination

Assignments: Attendance and class discussion is required.

Methods of Resident Evaluation: Grade is based on a final examination.

Teaching and Learning Methodologies: Lecture and seminar.

Course Texts, Recommended Reading, Material and Resources:

Okeson JP. Management of temporomandibular disorders and occlusion, ed. 6. Elsevier Mosby Saunders. 2008 ISBN 987-0-323-04614-5.