

SYLLABUS

COURSE: DENU 2991 Interdisciplinary Biological Sciences Review
SEMESTER: Summer
CREDIT HOURS: 1.0

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COURSE DIRECTORS: Amy L. Ridall, D.D.S., Ph.D.

GOALS

The Interdisciplinary Basic Sciences Review is a review course designed to provide an overview of the Basic Sciences of Anatomy, Neuroanatomy, Histology, Oral Histology, Embryology, Biochemistry, Physiology, Pathology, Microbiology, Occlusion, and Dental Anatomy. It is not possible to provide extensive coverage of any one subject; thus, the objective of this course will be to provide a review of specific topics that will help the student prepare for the National Board Dental Examination, Part I. Where possible, emphasis will be placed on assisting the student in identifying areas of integration between the subtopics in Basic Sciences, especially in the areas of immunopathology, biochemistry-physiology, and embryology-anatomy. A mock NBDE examination will be provided to allow the student to assess his/her progress in self-study and identify specific areas of weaknesses and strengths.

OBJECTIVES

I. ANATOMICAL SCIENCES

1. Review the gross anatomy of the head and neck.
 - a. vascular system
 - b. cranial nerves
 - c. peripheral nerves
 - d. sympathetic ganglia
 - e. parasympathetic ganglia
 - f. muscles and muscle function
 - g. lymphatic system and drainage patterns
 - h. central nervous system (brain and spinal cord)
2. Review the gross anatomy of the thorax and shoulder.
 - a. muscles and function
 - b. nerves
 - c. lymphatic drainage
3. Review the neuropathologies.
 - a. pathologies related to vascular supply
 - b. pathologies related to bacterial/viral infection
 - c. pathologies related to nerve dysfunction
4. Review the histology of general tissue structure.
 - a. Components of the cells
 - b. Tissue types
5. Review the development of the head and neck.
 - a. embryology of the pharyngeal arches
 - b. development of the tooth and surrounding structures
 - c. histology of the tooth and surrounding structures

II. BIOCHEMISTRY

1. Review the major metabolic pathways/control.
 - a. energy production pathways/energy breakdown pathways
 - b. metabolite synthesis/metabolite degradation
 - c. diseases related to disfunction
 - d. vitamins as cofactors
 - e. diseases related to vitamin deficiency
2. Review nuclear and cytoplasmic processes
 - a. DNA replication
 - b. transcription
 - c. translation

- d. gene control
- 3. Review the basic structure and function of proteins.
 - a. enzymes: structure, function, regulation
 - b. hemoglobin
 - c. hemostasis
- 4. Review signaling pathways.
 - a. steroid hormones
 - b. polypeptide hormones
 - c. secondary messengers
 - d. receptors
- 5. Review basic molecular biology techniques.
 - a. cloning
 - b. polymerase chain reaction
- 6. Review of connective tissue biology.
 - a. collagen
 - b. extracellular matrix proteins and enzymes

III. PHYSIOLOGY

- 1. Review renal physiology.
 - a. regulation of water and electrolyte balance
 - b. regulation of blood pressure
 - c. metabolic acidosis/alkalosis
- 2. Review gastro-intestinal physiology.
 - a. enzymes
 - b. salivary function
- 3. Review endocrine physiology.
 - a. steroid
 - b. reproductive hormones/ cycles
 - c. Vitamin D
 - d. insulin/glucagon
- 4. Review neurophysiology.
 - a. action potentials/membrane potentials
 - b. synaptic transmissions
 - c. nerve signal propagation
- 5. Review cardiophysiology.
 - a. cardiac regulation
 - b. regulation of blood pressure
 - c. cardiac cycle

6. Review respiratory physiology.
 - a. principles of diffusion and partial pressures
 - b. respiratory acidosis/alkalosis
7. Review muscle physiology.
 - a. reflexes
 - b. muscle actions

IV. DENTAL ANATOMY

1. Review the anatomy and eruption patterns of primary dentition.
2. Review the anatomy of secondary dentition.
3. Review the relationship of secondary dentition in static occlusion.
4. Review the relationship of secondary dentition in mandibular movements.
5. Review the temporomandibular joint: structure and function.
6. Review the relationship between anatomic variants and occlusal morphology.
7. Review pulp morphology.

V. MICROBIOLOGY AND IMMUNOLOGY

1. Review the hepatoviruses and their associated diseases.
2. Review human immunodeficiency virus and its associated diseases.
3. Review immunology.
 - a. innate immune mechanisms
 - b. antibody production and diversity
 - c. T-cell function
 - d. macrophage function
 - e. MHC restriction
 - f. transplant immunology
 - g. immune hypersensitivity reactions
 - h. allergic response
4. Review oral microorganisms.
 - a. normal
 - b. plaque
 - c. caries
 - d. periodontal disease
5. Review major categories of bacteria and their associated diseases.
6. Review sterilization techniques and effectiveness.

VI. PATHOLOGY

1. Review basic pathology definitions
2. Review tumor biology
3. Review respiratory pathology
4. Review dermal/epithelial pathologies
5. Review immune response to pathologies

RESOURCES

I. Media Resources

A. Printed Media

1. Handouts, when available

B. Non-printed Media

1. Slide presentations on Blackboard, when available
URL: <http://blackboard.uth.tmc.edu>

II. Human Resources

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STUDY PLAN AND REQUIREMENTS

Prepare for this course as you would prepare for the National Board Dental Examinations. Good sources of reference are your class notes, PowerPoint presentations on Blackboard, previously released NBDE I exams, and Dental Decks.

For maximal preparation, the student should not wait until each review session is presented before beginning to study a specific topic. It is not the intent of this course to review all topics that were presented in the Basic Science curriculum, nor is it the intent of this course to substitute for self-study. Rather, this course is designed to present specific topics to help students identify where emphasis has been placed in previous NBDE exams. In addition, students will also be guided in studying areas of integration between topics.

DENU 2991 INTERDISCIPLINARY BIOLOGICAL SCIENCES REVIEW

Summer 2004 Lecture Schedule

Tuesdays and Thursdays, 10 am -11:50 am

Date	Lecture Topic	Presenter
Tue, June 1	Introduction/Neuroanatomy	Gibson
Thu, June 3	Gross Anatomy	Warner/Zhang
Tue, June 8	Immunology/Virology/Sterilization	Storthz
Thu, Jun 10	Bacteriology Pathology	Lou Vigneswaran
Tue, Jun 15	Physiology	Turner/Hutchins
Thu, Jun 17	Physiology Biochemistry	Zachariasen Ridall
Fri, Jun 18 9 am-11:50 am	EXAM I Room 207	Ridall
Tue, Jun 22	Dental Anatomy	Ferguson/Dosch/Frey
Thu, Jun 24	Biochemistry	Ridall
Thu, Jun 29	EXAM II Room 207	Ridall

EVALUATION METHODS

The final grade will consist of the following:

Final examination:	76%
Attendance	24%

There are two examinations scheduled for this course:

Examination I

The first examination will be given during the middle of the course. This is designed to assist the student in assessing his/her weaknesses and strengths, while allowing sufficient time for continued study/tutoring. The examination will consist of 240 multiple-choice questions, 60 questions allotted to each NBDE I section: Anatomical Sciences, Biochemistry-Physiology, Dental Anatomy, Microbiology-Pathology. The scoring of the examination will be in accordance to the scoring used for the NBDE I. For each of the 4 major sections, the grade for each individual section will be calculated from the percentile scores. The passing grade on each section is a 75. The overall final examination grade will be comprised of the average of the scores on all 4 sections.

Any student who receives a passing grade on each of the four sections AND achieves a raw score of 50% or better on each of the 4 examination sections will not be required to take the second examination.

Examination II

A second examination will be given after all of the review sessions have been presented. A student who is not required to take the second examination, but wishes to raise his/her class grade may take the second examination and the better of the two scores will be recorded as the grade of record. The second examination format and scoring will be identical to Examination I.

Final course grade

The final course grade will be calculated by using the higher of the two examination grades. Attendance will be taken during each two-hour session. Each attended session will contribute 3 (three) percentage points to the final course grade. A student attending all sessions will receive an additional 5 (five) percentage points toward the final course grade. A waiver for an excused absence will be granted after receipt of official notification from the Office of Student Affairs. Although it is potentially possible to achieve a grade of 105, the highest grade that will be recorded is a 100.

Course Failure/Remediation

Any student receiving a failing grade, that is two (2) or more standard deviations lower than the exam average, on Examination II will be required to meet with the Associate Dean for Academic Affairs to determine eligibility to take the NBDE I exam.

Any student who receives a failing grade for the course will have the failing grade recorded at the registrar. There will be no formal remediation or remake examination offered for this course. To receive a grade change to a 70, the student must receive a passing grade on the National Board Dental Examination I.