**ESSEX COUNTY COLLEGE**

**Biology and Chemistry Division**

**BIO 125 – Anatomy and Physiology of the Eye**

**Course Outline**

**Course Number & Name:**  BIO 125 Anatomy and Physiology of the Eye

**Credit Hours:**  3.0 **Contact Hours:**  3.0 **Lecture:** 3.0 **Lab:**  N/A **Other:**  N/A

**Prerequisites**:  Acceptance into the Vision Care program

**Co-requisites:** None **Concurrent Courses:** OPH 124 – OPH 127

**Course Outline Revision Date:** Fall 2010

**Course Description:** This course will build from a basic overview of human anatomy and physiology to a specific focus on the anatomy and physiology of the eye. Emphasis will be placed on embryological development of the eye, exploration of the normal structure and function of ocular tissue and their interrelationship with other systems and how the eye relates to contact lenses. Considerations will be given to anatomical abnormalities and pathophysiology of the visual system. Laboratory demonstrations will include: eye dissection, examination of pathological processes, visual testing and visual perception experimentation.

**Course Goals:** Upon successful completion of this course, students should be able to do the following:

1. recognize, describe and identify the different types of ocular pathologies;
2. label and discuss various parts of the anatomy of the eye; and
3. describe the physiology of the human eye and cellular biology.

**Measurable Course Performance Objectives (MPOs)**: Upon successful completion of this course, students should specifically be able to do the following:

1. Recognize, describe and identify the different types of ocular pathologies:

1.1 *list and explain common anomalies, deficiencies and deformities as they relate to the human eye;*

1.2 *describe and diagnosis visual field defects and diseases of the retina;* and

1.3 *discuss the differences between phorias and tropias and how they relate to prism*

2. Label and discuss various parts of the anatomy of the eye:

2.1 *define various terms as they relate to the anatomy, physiology and pathology of the eye;*

2.2 *explain the basics of human anatomy including cells, tissues, organs, and systems;*

2.3 *explain and utilize correct taxonomy;*

* 1. *identify the front view of the eye within the palpabral fissure;*
  2. *identify and describe the cranial nerves and their functions;*
  3. *identify the bones that make up the orbit of the eye;* and
  4. *describe the lacrimal apparatus on its order of function*

**Measurable Course Performance Objectives (MPOs)** (continued):

3. Describe the physiology of the human eye and cellular biology:

* 1. *discuss the makeup of the accommodative mechanism and its function as it refers to accommodation;*
  2. *describe the muscles of the eye and their functions;*
  3. *describe the different humors of the eye, the anatomy of the retina, and the optic nerve and its pathways;*
  4. *define rods and cones and explain their functions as photoreceptors;*
  5. *discuss the growth and development of the eye as it changes with age*; and
  6. *identify and recognize different types of drugs (i.e., prophylactic, diagnosis, and therapeutic)*

**Methods of Instruction**: Instruction will consist of lectures, demonstrations, guest speakers, and audio-visual aids.

**Outcomes Assessment:** Test and exam questions are blueprinted to course objectives. Data is collected and analyzed to determine the level of student performance on these assessment instruments in regards to meeting course objectives. The results of this data analysis are used to guide necessary pedagogical and/or curricular revisions.

**Course Requirements:** All students are required to:

1. Maintain regular attendance.
2. Complete assigned homework on time.
3. Take part in class discussions.
4. Take all tests and exams given.

**Methods of Evaluation:** Final course grades will be computed as follows:

**% of**

**Grading Components final course grade**

* 3 or more Written Tests (dates specified by the instructor) 66.7%

Tests will show evidence of the extent to which students meet course objectives, including but not limited to identifying and applying concepts, analyzing and solving problems, and stating appropriate conclusions using correct terminology.

* **1 Written Final Exam** **33.3%**

The same objectives apply as with tests, but it is anticipated that students will provide increased evidence of synthesizing a combination of concepts.

Note: Students must obtain an overall average of at least 70% to pass the course.

**Academic Integrity:** Dishonesty disrupts the search for truth that is inherent in the learning process and so devalues the purpose and the mission of the College.  Academic dishonesty includes, but is not limited to, the following:

* plagiarism – the failure to acknowledge another writer’s words or ideas or to give proper credit to sources of information; could result in a
* cheating – knowingly obtaining or giving unauthorized information on any test/exam or any other academic assignment;
* interference – any interruption of the academic process that prevents others from the proper engagement in learning or teaching; and
* fraud – any act or instance of willful deceit or trickery.

Violations of academic integrity will be dealt with by imposing appropriate sanctions.  Sanctions for acts of academic dishonesty could include the resubmission of an assignment, failure of the test/exam, failure in the course, probation, suspension from the College, and even expulsion from the College.

**Student Code of Conduct:** All students are expected to conduct themselves as responsible and considerate adults who respect the rights of others. Disruptive behavior will not be tolerated. All students are also expected to attend and be on time all class meetings. No cell phones or similar electronic devices are permitted in class. Please refer to the Essex County College student handbook, *Lifeline*, for more specific information about the College’s Code of Conduct and attendance requirements.

**Course Content Outline:** based on the text **Clinical Anatomy of the Visual System**, 2nd edition, by Leeann Remington; published by Butterworth-Heinemann; 2005; **ISBN #:** 978-0-7506-749

**Week Topics**

1 – 3 General biology review – includes body plan, systems of the body, lymph and blood, microbiology, and disease

4 **Test #1**

Bones of the orbit, eyelids – muscles and glands of the lacrimal system and tear

film

5 Extraocular muscles / cornea and sclera

6 Crystalline lens / aqueous and vitreous chambers

7 Uvea

8 **Test #2**

Retina

9 Cranial nerve innervation

10 Visual pathway

11 Orbital blood supply

12 Ocular pathology

13 Review

**Test #3**

14 Review for the Final Exam

15 **Final Exam**