# OPHTHALMOLOGY AND VISUAL SCIENCES (OPHTHALM)

**OPHTHALM 699 – DIRECTED STUDY**
1-5 credits.

Directed study projects as arranged with faculty member.
**Requisites:** Consent of instructor
**Course Designation:** Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
**Repeatable for Credit:** Yes, unlimited number of completions
**Last Taught:** Spring 2025
**Learning Outcomes:** 1. Apply concepts learned in coursework to real life situations
Audience: Undergraduate

2. Read and effectively search scientific literature
Audience: Undergraduate

3. Develop critical, analytical, and independent thinking skills
Audience: Undergraduate

4. Gain research experience in an area of interest
Audience: Undergraduate

5. Develop/improve scientific writing skills.
Audience: Undergraduate

**OPHTHALM 750 – OCULAR DISEASES OF THE MAMMALIAN VISION SYSTEM**
3 credits.

An integrated approach to basic aspects of the mammalian visual system from anatomy and molecular/cellular biology to current and future therapeutic treatments of common ocular disorders. Seven general areas being covered include development and anatomy of the eye, physiology of the visual system, immunology and ocular surface diseases, retinal diseases, glaucoma, and translational approaches to vision research.
**Requisites:** Graduate/professional standing
**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement
**Repeatable for Credit:** No
**Last Taught:** Spring 2025
**Learning Outcomes:** 1. Understand the basic elements of ocular development, anatomy, and visual processing in mammals
Audience: Graduate

2. Apply basic knowledge of the visual system to understand pathologic mechanisms of common ocular diseases
Audience: Graduate

3. Understand how modern therapeutic interventions work
Audience: Graduate

4. Use the foundational knowledge in the first 3 outcomes to analyze and evaluate new therapeutic strategies
Audience: Graduate

**OPHTHALM 910 – INDEPENDENT READING AND RESEARCH FOR FOURTH YEAR MEDICAL STUDENTS**
2-8 credits.

Independent research under the direct supervision of Ophthalmology faculty. Each student's research project is individualized to meet student research goals within context of faculty research needs.
**Requisites:** Graduate/professional standing
**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement
**Repeatable for Credit:** Yes, unlimited number of completions
**Last Taught:** Spring 2025
**Learning Outcomes:** 1. Formulate a hypothesis or specific objective if study does not involve hypothesis generating research
Audience: Graduate

2. Conduct a thorough literature review of the specific research question
Audience: Graduate

3. Select and apply statistical methodologies appropriate for the proposed research plan
Audience: Graduate

4. Interpret results correctly and in context of previous findings from literature review
Audience: Graduate

**OPHTHALM 911 – INTRODUCTION TO THE VISUAL SYSTEM**
4 credits.

Become familiar with the basic science within ophthalmology. Comprehensive analysis of four common ophthalmic diseases, including ocular surface infections and immunology, glaucoma, diabetic retinopathy, and age-related macular degeneration.
**Requisites:** MED SC-M 810, 811, 812, and 813
**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement
**Repeatable for Credit:** No
**Last Taught:** Spring 2025
**Learning Outcomes:** 1. Describe fundamental principles of diabetic retinopathy.
Audience: Graduate

2. Demonstrate knowledge of fundamental principles of glaucoma.
Audience: Graduate

3. Demonstrate knowledge of fundamental principles age related macular degeneration.
Audience: Graduate

4. Demonstrate knowledge of ocular surface disease including corneal disease and uveitis.
Audience: Graduate

5. Be able to critically analyze and discuss research papers.
Audience: Graduate

6. Be able to complete one research project per week with a research mentor.
Audience: Graduate

**OPHTHALM 919 – INDIVIDUALIZED PHASE 3 CLINICAL ELECTIVE IN OPHTHALMOLOGY**
2-4 credits.

In-depth exposure to ambulatory ophthalmology, operative ophthalmology, subspecialty clinics, working under the direct supervision of Ophthalmology faculty, residents, fellows. Complete other patient care related learning activities as assigned by instructors (e.g., literature reviews, presentations on specific topics); these are dependent on the individual student, attending physician, and clinical site. Each student's schedule individualized to meet each location's capacity and student preference.
**Requisites:** Graduate/professional standing
**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement
**Repeatable for Credit:** Yes, unlimited number of completions
**Last Taught:** Spring 2025
**Learning Outcomes:** 1. Perform a hypothesis driven history and complete a targeted exam.
Audience: Graduate

2. Develop and present a weighted differential diagnosis, diagnostic and treatment plans.
Audience: Graduate

3. Complete written documentation in a comprehensive, concise, accurate and timely manner.
Audience: Graduate

4. Review, interpret and present current literature to support patient care.
Audience: Graduate

5. Develop clinically relevant questions to advance learning.
Audience: Graduate

6. Communicate effectively with patients, families, physicians and non-physician team members.
Audience: Graduate

7. Engage patients in shared decision making regarding tests, orders and procedures.
Audience: Graduate