Vision Science (VIS SCI)

Courses

Expand all course descriptions [+]
Collapse all course descriptions [-]

VIS SCI 24 Freshman Seminars 1 Unit
Terms offered: Fall 2021, Spring 2021, Spring 2020
The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen.

Freshman Seminars: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of seminar per week

Additional Details

Subject/Course Level: Vision Science/Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

Freshman Seminars: Read Less [-]

VIS SCI 39 Freshman and Sophomore Seminar 1.5 - 3 Units
Terms offered: Fall 2021, Spring 2021, Fall 2020
Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. Enrollment limits are set by the faculty but the suggested limit is 25.

Freshman and Sophomore Seminar: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1.5-3 hours of seminar per week

Additional Details

Subject/Course Level: Vision Science/Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

Freshman and Sophomore Seminar: Read Less [-]

VIS SCI 84 Sophomore Seminar 1 or 2 Units
Terms offered: Spring 2024, Fall 2023, Spring 2023
Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

Sophomore Seminar: Read More [+]

Rules & Requirements

Prerequisites: At discretion of instructor

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring:
5 weeks - 3-6 hours of seminar per week
10 weeks - 1.5-3 hours of seminar per week
15 weeks - 1-2 hours of seminar per week

Summer:
6 weeks - 2.5-5 hours of seminar per week
8 weeks - 1.5-3.5 hours of seminar and 2-4 hours of seminar per week

Additional Details

Subject/Course Level: Vision Science/Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

Sophomore Seminar: Read Less [-]

VIS SCI 199 Supervised Independent Study and Research 1 - 4 Units
Terms offered: Fall 2023, Fall 2022, Fall 2021
Supervised independent study and research. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog.

Supervised Independent Study and Research: Read More [+]

Rules & Requirements

Prerequisites: Upper division status and consent of instructor, the student's major adviser and the departmental chair

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
8 weeks - 1.5-7.5 hours of independent study per week

Additional Details

Subject/Course Level: Vision Science/Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam required.

Supervised Independent Study and Research: Read Less [-]
**VIS SCI 201A Seminar in Vision Science 2**
**Units**
Terms offered: Fall 2023, Fall 2021, Fall 2020
Graduate seminar in vision science.
Seminar in Vision Science: Read More [+]

**Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

**Hours & Format**
Fall and/or spring: 15 weeks - 2 hours of seminar per week

**Additional Details**

**Subject/Course Level:** Vision Science/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** VS faculty

Seminar in Vision Science: Read Less [-]

**VIS SCI 201B Seminar in Vision Science 2**
**Units**
Terms offered: Spring 2024, Spring 2023, Spring 2022
Graduate seminar in vision science.
Seminar in Vision Science: Read More [+]

**Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

**Hours & Format**
Fall and/or spring: 15 weeks - 2 hours of seminar per week

**Additional Details**

**Subject/Course Level:** Vision Science/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Gronert

Seminar in Vision Science: Read Less [-]

**VIS SCI 206C Anatomy and Physiology of the Eye and Visual System 2**
**Units**
Terms offered: Spring 2021, Spring 2020, Spring 2019
Problem-based learning approach using clinical case examples.
Continuation of 206A-206B.
Anatomy and Physiology of the Eye and Visual System: Read More [+]

**Rules & Requirements**

**Prerequisites:** 206A-206B

**Repeat rules:** Course may be repeated for credit without restriction.

**Hours & Format**
Fall and/or spring: 7.5 weeks - 4 hours of seminar per week

**Additional Details**

**Subject/Course Level:** Vision Science/Graduate

**Grading:** Letter grade.

**Formerly known as:** 106C

Anatomy and Physiology of the Eye and Visual System: Read Less [-]

**VIS SCI 215 Visual System Development 2**
**Units**
Terms offered: Fall 2015, Fall 2014, Fall 2013
Visual System Development: Read More [+]

**Rules & Requirements**

**Prerequisites:** 206B

**Hours & Format**
Fall and/or spring: 15 weeks - 2 hours of lecture per week

**Additional Details**

**Subject/Course Level:** Vision Science/Graduate

**Grading:** Letter grade.

**Formerly known as:** 115

Visual System Development: Read Less [-]
**VIS SCI 230 Ethics in Scientific Research 2 Units**
Terms offered: Spring 2024, Spring 2023, Spring 2022
This seminar will examine a range of ethical issues that arise in the process of doing science. Beginning with the philosophical and social foundations, we will consider the pathogenesis of fraud, statistics and deception, the ethics of authorship and publication, research with human subjects, the use of animals, the definition(s) of misconduct and the difference between misconduct and questionable research practices, the relationship between industry and science, and finally, the responsibilities and obligations of the scientist in society.
Ethics in Scientific Research: Read More [+]

**Hours & Format**
Fall and/or spring: 15 weeks - 30 hours of seminar per week

**Additional Details**
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.

Ethics in Scientific Research: Read Less [-]

**VIS SCI 260A Optical and Neural Limits to Vision 3 Units**
Terms offered: Fall 2023, Fall 2022, Fall 2021
The course will provide an overview of the early stage limits to human vision, from the eye’s optics to sampling and processing in the retina. Students will learn basic optical properties of the eye as well as objective and subjective techniques on how to measure limits of human vision. The class will comprise a combination of lectures and active learning by the students in the form of a project, to be presented at the end of the semester. This is one of the four courses that form the Vision Science core curriculum.
Optical and Neural Limits to Vision: Read More [+]

**Rules & Requirements**
Repeat rules: Course may be repeated for credit with instructor consent.

**Hours & Format**
Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Additional Details**
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.
Instructor: Austin Roorda

Optical and Neural Limits to Vision: Read Less [-]

**VIS SCI 260B Introduction to Ocular Biology 3 Units**
Terms offered: Fall 2023, Fall 2020, Fall 2019
The course will provide an overview of eye development, anterior eye ocular anatomy and physiology and ocular disease. The course will be a combination of didactic lectures and problem-based learning. This is one of the four courses that form the Vision Science core curriculum.
Introduction to Ocular Biology: Read More [+]

**Rules & Requirements**
Repeat rules: Course may be repeated for credit with instructor consent.

**Hours & Format**
Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Additional Details**
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.
Instructor: Suzanne Fleiszig

Introduction to Ocular Biology: Read Less [-]

**VIS SCI 260C Introduction to Visual Neuroscience 3 Units**
Terms offered: Spring 2024, Spring 2023, Spring 2022
The course will provide an overview of the neuroscience of vision, spanning the entire neural pathway from retinal neurobiology to cortical processing of visual signals. The class will comprise a combination of lectures and active learning by the students in the form of a project, to be presented at the end of the semester. This is one of the four courses that form the Vision Science core curriculum.
Introduction to Visual Neuroscience: Read More [+]

**Rules & Requirements**
Repeat rules: Course may be repeated for credit with instructor consent.

**Hours & Format**
Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Additional Details**
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.
Instructor: Michael Silver

Introduction to Visual Neuroscience: Read Less [-]
VIS SCI 260D Seeing in Time, Space and Color 3 Units
Terms offered: Spring 2024, Spring 2023, Spring 2022
The course will provide an overview of how we see in time (temporal signal processing, eye motion, motion detection), space (stereo vision, depth perception), and color as well as the anatomical and physiological factors that facilitate these capabilities. The course will be series of didactic lectures. This is one of the four courses that form the Vision Science core curriculum.

Rules & Requirements
Repeat rules: Course may be repeated for credit with instructor consent.

Hours & Format
Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.
Instructor: Martin Banks

VIS SCI 262 Visual Cognitive Neuroscience 3 Units
Terms offered: Fall 2021, Fall 2018, Spring 2016
The course will provide an overview of visual cognitive neuroscience, drawing from neuroanatomy, neurophysiology in humans and animal models, psychophysics, neuroimaging, neuropsychology, and computational models of vision and cognition. Topics will include basic anatomy and physiology of the mammalian visual system, motion perception and processing, depth perception and representation of visual space, brightness and color, object and face recognition, visual attention, developmental and adult plasticity, perceptual learning, multisensory integration, and visual awareness.

Rules & Requirements
Prerequisites: Consent of instructor
Repeat rules: Course may be repeated for credit without restriction.

Hours & Format
Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.
Instructor: Silver

VIS SCI 265 Neural Computation 3 Units
Terms offered: Fall 2022, Fall 2020, Fall 2018
This course provides an introduction to the theory of neural computation. The goal is to familiarize students with the major theoretical frameworks and models used in neuroscience and psychology, and to provide hands-on experience in using these models. Topics include neural network models, supervised and unsupervised learning rules, associative memory models, probabilistic/graphical models, and models of neural coding in the brain.

Rules & Requirements
Prerequisites: Calculus, differential equations, basic probability and statistics, linear algebra, and familiarity with high level programming languages such as Matlab

Hours & Format
Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.
Instructor: Olshausen

VIS SCI C265 Neural Computation 3 Units
Terms offered: Prior to 2007
This course provides an introduction to the theory of neural computation. The goal is to familiarize students with the major theoretical frameworks and models used in neuroscience and psychology, and to provide hands-on experience in using these models. Topics include neural network models, supervised and unsupervised learning rules, associative memory models, probabilistic/graphical models, and models of neural coding in the brain.

Rules & Requirements
Prerequisites: Calculus, differential equations, basic probability and statistics, linear algebra, and familiarity with high level programming languages such as Matlab

Hours & Format
Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details
Subject/Course Level: Vision Science/Graduate
Grading: Letter grade.
Instructor: Olshausen
Also listed as: NEUROSC C265

Neural Computation: Read Less [-]
VIS SCI C280 Computer Vision 3 Units
Terms offered: Spring 2024, Spring 2023, Spring 2022
Computer Vision: Read More [+]  
Rules & Requirements  
Prerequisites: MATH 1A; MATH 1B; MATH 53; and MATH 54  
(Knowledge of linear algebra and calculus)  
Hours & Format  
Fall and/or spring: 15 weeks - 3 hours of lecture per week  
Additional Details  
Subject/Course Level: Vision Science/Graduate  
Grading: Letter grade.  
Instructor: Malik  
Also listed as: COMPSCI C280  
Computer Vision: Read Less [-]

VIS SCI 298 Group Studies, Seminars, or Group Research 1 - 6 Units
Terms offered: Spring 2024, Fall 2023, Spring 2023
Group studies of selected topics. Advanced studies in various subjects through special seminars on topics to be selected each year, informal groups studying special problems, group participation in experimental problems and analysis.
Group Studies, Seminars, or Group Research: Read More [+]
Rules & Requirements  
Repeat rules: Course may be repeated for credit without restriction.  
Hours & Format  
Fall and/or spring: 15 weeks - 2-6 hours of lecture per week  
Additional Details  
Subject/Course Level: Vision Science/Graduate  
Grading: Letter grade.  
Group Studies, Seminars, or Group Research: Read Less [-]

VIS SCI 299 Research in Vision Science 1 - 12 Units
Terms offered: Spring 2024, Fall 2023, Summer 2023 Second 6 Week Session  
Research.  
Research in Vision Science: Read More [+]  
Rules & Requirements  
Prerequisites: Consent of instructor  
Hours & Format  
Fall and/or spring: 15 weeks - 0 hours of independent study per week  
Summer:  
6 weeks - 1-16 hours of independent study per week  
8 weeks - 1-12 hours of independent study per week  
Additional Details  
Subject/Course Level: Vision Science/Graduate  
Grading: Letter grade.  
Research in Vision Science: Read Less [-]

VIS SCI 300 Teaching Methods in Vision Science 1 Unit
Terms offered: Spring 2024, Spring 2023, Fall 2022  
Instruction in teaching methods and materials, in vision science and optometry; practice teaching in classrooms and laboratory.  
Teaching Methods in Vision Science: Read More [+]  
Rules & Requirements  
Prerequisites: Graduate standing in vision science  
Repeat rules: Course may be repeated for credit without restriction.  
Hours & Format  
Fall and/or spring: 15 weeks - 1 hour of lecture per week  
Additional Details  
Subject/Course Level: Vision Science/Professional course for teachers or prospective teachers  
Grading: Offered for satisfactory/unsatisfactory grade only.  
Instructor: Silver  
Teaching Methods in Vision Science: Read Less [-]
**VIS SCI 375A Teaching Methods in Vision Science, I** 1 Unit
Terms offered: Fall 2023
Instruction in teaching methods and materials in vision science and optometry; practice teaching in classroom and laboratory. Lectures, discussion and outside work related to learning effective teaching styles, developing optimal teaching environments, accessing teaching resources, and fostering professional development.

Teaching Methods in Vision Science, I: Read More [+]

**Rules & Requirements**

**Prerequisites:** This course is restricted to student in the Vision Science graduate program

**Repeat rules:** Course may be repeated for credit without restriction.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Vision Science/Professional course for teachers or prospective teachers

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Teaching Methods in Vision Science, I: Read Less [-]

**VIS SCI 375B Teaching Methods in Vision Science, II** 1 Unit
Terms offered: Spring 2024
Instruction in teaching methods and materials in vision science and optometry; practice teaching in classroom and laboratory. Lectures, discussion and outside work related to teaching methods and assessment of student learning, including lecture-based, problem-based, active, and inquiry-based learning. Instruction on student engagement and effective communication.

Teaching Methods in Vision Science, II: Read More [+]

**Rules & Requirements**

**Prerequisites:** This course is restricted to students in the Vision Science graduate program

**Repeat rules:** Course may be repeated for credit without restriction.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Vision Science/Professional course for teachers or prospective teachers

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Teaching Methods in Vision Science, II: Read Less [-]

**VIS SCI 601 Individual Study for Master’s Students** 1 - 6 Units
Terms offered: Spring 2021, Spring 2020, Spring 2019
Individual study for the comprehensive requirements in consultation with the adviser in vision science.

Individual Study for Master's Students: Read More [+]

**Rules & Requirements**

**Prerequisites:** Consent of instructor

**Credit Restrictions:** Course does not satisfy unit or residence requirements for master’s degree.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 0 hours of independent study per week

**Additional Details**

**Subject/Course Level:** Vision Science/Graduate examination preparation

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Individual Study for Master's Students: Read Less [-]

**VIS SCI 602 Individual Study for Doctoral Students** 1 - 6 Units
Terms offered: Fall 2023, Fall 2022, Fall 2021
Individual study in consultation with the adviser in vision science, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for the Ph. D.

Individual Study for Doctoral Students: Read More [+]

**Rules & Requirements**

**Prerequisites:** Consent of instructor

**Credit Restrictions:** Course does not satisfy unit or residence requirements.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 0 hours of independent study per week

**Additional Details**

**Subject/Course Level:** Vision Science/Graduate examination preparation

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Individual Study for Doctoral Students: Read Less [-]