STUDENT HANDBOOK
GRADUATE PROGRAM IN VISION SCIENCE
STATE UNIVERSITY OF NEW YORK,
STATE COLLEGE OF OPTOMETRY

Welcome

As the Associate Dean for Graduate Studies and Research, I want to welcome you to the Graduate Program in Vision Science at SUNY, State College of Optometry. My Office is located on the 15th floor in room 1542. My program assistants are Ms. Debra Berger and Ms. Zenia Tarkiewicz. We can all be reached by e-mail or by telephone at extension 5540. Zenia and Debra are your contact persons for all matters relating to graduate studies. Always make an appointment to see me by contacting Zenia.

As you know, vision science is the study of the structures and processes involved in vision. It includes such disciplines as physics, biology (biochemistry, anatomy, physiology, etc.), behavioral sciences, applied mathematics and engineering, as applied to the visual system.

Careers

A career in vision research can be oriented towards answering questions about normal or abnormal processes. Students in the graduate program learn to answer such questions by studying topics in such areas as visual processing, color vision, binocular vision, spatial vision, motion perception, visual perception, visual biochemistry, visual anatomy and physiology, visual accommodation, visual development, visual optics, ocular motility, and many others. The typical career path for Ph.D. level vision researchers is either an academic, governmental, foundation, or industry appointment. Ph.D. students are particularly attractive as teaching and research faculty at Colleges and Schools of Optometry. O.D/.M.S. students can utilize their basic background in vision to be part of an established research team, engage in clinical trial studies, or pursue further education.

Program Duration

O.D./M.S. students generally earn an M.S. Degree within 3-4 years. A Ph.D. generally takes a minimum of 5-6 years from start to finish.

Orientation

Generally all students begin in the Fall semester. During this time, you are expected to complete the following activities:

a) Registration: Ph.D. students and O.D./M.S. students
b) Assigned shared offices for Ph.D. students (O.D./M.S. students utilize space in their graduate advisors research laboratories)
c) See Zenia to obtain office key, email, internet, and copy card library privileges

d) All students use the College's computer facilities in the library or obtain their own personal computer.
e) In addition to this Student Handbook supplement, all graduate students are required to be familiar with the College's general student handbook (http://www.sunyopt.edu/current/stuhandbook.shtml) and the Graduate Policy document (http://www.sunyopt.edu/research/docs/POLICYDOC.pdf)

.Faculty and Graduate Advisors

Graduate Program Faculty serve as advisors once officially selected. Prior to that, the Associate Dean for Graduate Studies is the advisor to all students. Students are expected to select their own graduate advisors, under the guidance of the Associate Dean, by seeking them out, visiting them, and seeing how their labs run. An email should then be sent to the Associate Dean by the student, and cc'ed to the advisor, indicating selection of the advisor.

Registration for Graduate Credits

Students are expected to fill out their own seminar schedule under the guidance of their faculty advisor and then submit it to the Associate Dean's office. The Policy of the Graduate Program (separate document) provides, in detail, all official degree requirements. Generally, full-time students take 12 credits per semester. O.D/M.S and O.D./Ph.D. students generally take only three credit hours per semester. For all combined students, June, July, and August is the major time for intensive research experience.

Courses may be added during the first two weeks of the semester and dropped within the first four weeks of the semester by submitting an add/drop form.

Tuition Waivers

Most full-time Ph.D. students admitted into the Graduate Program in Vision Science are eligible for a Graduate Program tuition waiver, renewable annually. Students admitted to the O.D./Ph.D. Optometrist Scientist Program also receive a partial tuition waiver for the last year of the professional optometry program.

Stipends and Assistantships

Most full-time Ph.D. students receive a stipend which requires them to work as a Graduate Assistant, either doing teaching (TA), research (RA), or general service (GA) for 20 hours per week each semester. O.D./M.S. students are expected to engage in full-time (10 weeks, 35 hours per week) research through June, July and August. Generally they are paid a stipend for full-time research effort through work-study (WS) funds if eligible or institutional funds if not eligible for WS. Students are also expected to apply for National Eye Institute Short-term Summer Research Training Stipends (T35).

Library Services & Media Center

The Harold Kohn Vision Science Library is the largest specialty collection of its kind in the country. Personalized reference services are available Monday through Friday from 9 A.M. to 5 P.M. and the library is open for research seven days a week. Graduate students may use the services of the Media Center for poster presentations at scientific meetings.

PH.D. PROGRAM GOALS AND OBJECTIVES

Goal and Objectives of PhD Program in Vision Science

The PhD program in Vision Science aims to train students who will go on to do ground-breaking research. As part of their research training, students participate in thinking of:

- Significant questions
- Innovative ways of attacking these questions
- Systemic ways of analyzing and modeling the results
- Drawing broader theoretical implications
- Presenting the work in written and oral form

Students also learn the practices and norms of the scientific community and how to win grants to fund scientific work.

Program Assessment

Progress in meeting the goal and objectives of the PhD program will be determined through the regular collection and analysis of the following data:

- Student performance on written examinations
- Student performance on oral presentations
- Number of student publications
- Number of student presentations at scientific meetings
- Post-graduate research success as indicated by
    - Receipt of grants
    - Placement in post-doctoral research positions
    - Faculty appointments
    - Publication records

PH.D. and O.D. /Ph.D. PROGRAM REQUIREMENTS

Year 1

Two-semester Pro-seminar: Introduction to Vision Science

(6 credits: Meets twice a week in Fall and Spring semesters)

Students are expected to acquire broad knowledge in vision science. The Pro-seminar will include:

- Anatomy of the eye, orbit, muscles
- Optics (geometrical and visual)
- Systems neuroscience (sensory processing, control of eye position)
- Physiology & genetics (genes, proteins, receptors, ionic mechanisms, cells)
- Contrast and acuity (pattern/spatial vision)
- Perception (environmental cues, material, surface, object and scene perception)

- Formal methods (Linear systems, signal detection, Bayesian reasoning, neural modeling, image processing)
- Experimental methods (electrophysiology, neuroanatomy, psychophysics)
- Imaging (cells, retina, cortex)

Statistics: (2 credits: Meets once a week in Fall semester)
Students who have a strong background in statistics may seek instructor approval for a course waiver.

Two Research Lab Rotations: (6 credits per semester) The student and mentors optionally may select an interdisciplinary project that links the work done in the two rotations (which can be done simultaneously if advisers agree).

Minimum of 75% attendance at Journal Club, VisioNYC and SIVR Colloquia.

Year-end Oral Presentations:
Each Ph.D. student will make an oral presentation of the research done during the year in mid-May. The presentation will be an ARVO/VSS/Neuroscience style talk, even if no data have been accumulated. The presentation will last 15 minutes, with 5 minutes for questioning. Talks will be judged by all present grad faculty, emphasizing presentation quality, and ability to answer questions. This will provide critical feedback to the student at the end of the first year as well as practice in presenting.

Selection of Primary Faculty Advisor: no later than the day of the year-end oral presentations.

Year 2

Research Ethics: (1 credit)

Students who have made a strong start in research and coursework are encouraged to apply for fellowships from the NIH, NSF, or other foundations at the end of the first year or start of the second.

Two elective tutorials/seminars per semester: (2 credits per tutorial/seminar)
Tutorials are based on the Oxford/Cambridge model, have a maximum of two students with an instructor, and require weekly writing and presentation of reports. Seminars generally have more than two students, and include lectures and discussions.

Dissertation Research in advisor's laboratory: (12 credits in Fall, 8 credits in Spring semester)

Dissertation Research Committee : must be formed by the end of the Fall semester of the 2nd year.
One or more presentations at Journal Club.

Minimum of 75% attendance at Journal Club, VisioNYC and SIVR Colloquia.

Year-end Oral Presentations:
In year 2 and subsequent years, the 15 minute presentation will be evaluated by the student's Dissertation Research Committee. The oral presentation will be evaluated on the significance and quality of the research as well as presentation skills.

Ph.D. proposal (Aims, significance, background):
In lieu of the Specialty Area Exam, a proposal written in NRSA form to include Aims (1 page), Significance of Area (2 pages), and Background (up to 10 pages) must be submitted by the end of Year 2. The student will be required to provide an oral defense of this written material which will be graded by the student's Dissertation Research Committee.

Year 3

One tutorial/seminar per semester (2 credits per tutorial/seminar)

Dissertation Research in advisor's laboratory: (12 credits in Fall, 10 credits in Spring semester)

Formation of each student's Dissertation Research Committee (must be formed by the end of the Fall semester of the 2nd year.)

Two or more presentations at Journal Club.

Minimum of 75% attendance at Journal Club, VisioNYC and SIVR Colloquia.

One or more presentations at a conference before the end of year 3.

Year-end Oral Presentations:

Ph.D. proposal submitted and defended:
Students will be required to successfully defend a Ph.D. proposal in NRSA form (up to 25 pages) before the end of year 3. This will include possibly revised versions of Aims, Significance, and Background, along with Research Plan and Methods. After the proposal is reviewed and approved by the student's Dissertation Committee, it may be submitted to NIH or a suitable external funding source. Students are encouraged to submit the proposal to the Dissertation Committee by the beginning of year 3.

Years 4 & 5

One tutorial/seminar per year, or a research externship at an outside institution. (2 credits per tutorial) Ph.D. students winning a slot at a summer course at CSHL, MBL, or another university/institute will be allowed to substitute this course for one tutorial/seminar requirement

with prior approval from the advisor. Externships may last between four weeks and one semester on a topic related to the student's dissertation work (students should actively help to identify funding mechanisms well in advance). Externships prior to the summer before the fourth year require the Dean's approval.

Dissertation Research in advisor's laboratory: (12 credits Fall, 10 credits in Spring semester)

At least one presentation to Journal Club per year.

Minimum of 75% attendance at Journal Club, VisioNYC and SIVR Colloquia.

One or more presentations at a conference in years 4 or 5.

Submit & defend Ph.D. dissertation in the form of published or submitted journal articles. Defense will consist of an hour-long public presentation, to include a question period, followed by additional meeting with the student's committee.

Teaching Experience

Students are expected to become accomplished at explaining and teaching issues in vision science through the oral presentations listed above and through participating in formal teaching. Each year, a student is assigned at least one semester as a TA for laboratory instruction in the O.D. program. Other assistantship experiences are Research Assistant or assisting with SIVR colloquia, VisioNYC and/or the Journal Club.

General Grading and Evaluation

In the Proseminar, tutorials, and seminars, students will be graded A = Excellent, B/C = Pass, D/F = Fail). One or more Fail in a semester will lead to academic probation. Two semesters of probation will be cause for dismissal from the program.

All other requirements, including Pre-dissertation research, dissertation research, year-end oral presentations, dissertation proposal, and other oral presentations will be graded Unsatisfactory/Pass/Excellent.

Students will be expected to earn some Excellent (A) grades to be considered good performers. Students will be evaluated every year on all aspects of academic and research performance by their dissertation committee, and will be funded after year 2, only if the dissertation committee attests that they have shown the promise and motivation required for becoming a successful researcher. A student receiving Excellent on the dissertation will be graduated with Honors.

O.D./M.S. and M.S. PROGRAM REQUIREMENTS

Goal and Objectives of MS Program in Vision Science

The MS program in Vision Science aims to train students to integrate research into their profession. As part of their research training, students participate in formulating:

- Significant scientific questions
- Methods for attacking these questions
- Systematic ways of analyzing and modeling the results
- Assessments of scientific literature
- Presenting the work in written and oral form
- Evaluation of potential clinical impact of proposed work

Students also learn the practices and norms of the scientific community.

Program Assessment

Progress in meeting the goal and objectives of the MS program will be determined through the regular collection and analysis of the following data:

- Student performance on written examinations
- Student performance on oral presentations
- Number of student presentations at scientific meetings (and publications where possible)
- Post-graduate research success as indicated by
    - Continued participation in research as evidenced by conference participation
    - Faculty appointments
    - Publication records

Year 1

Fall Semester

Statistics (2 credits: Meets once a week in Fall Semester):

GSH-180FA Ocular Anatomy, Biochemistry & Physiology I
GRF-130FA Integrated Optics I

Selection of Research Advisor by end of Fall Semester

Pre-dissertation Research in Advisor's Lab (1 credit per semester)

Minimum of 6 session attendance at Journal Club, VisioNYC, SIVR colloquia, ARVO, or Academy research presentation per year, every year.

Spring Semester

One Elective Seminar: (2 credits)
Seminars include lectures, discussions, and presentations.

GVP-170SA Visual Function: Sensory

GSH-181SA Ocular Anatomy, Biochemistry & Physiology II

Year 2

Fall Semester

Research Ethics (One credit)

Pre-dissertation Research (4 credits).
Students receive a $3500 stipend through work-study funds for working 35 hrs in the lab during June, July and August.

One Elective Seminar: (2 credits)

Master of Science Committee: Must be formed by the end of the Fall semester.

Spring Semester

One Elective Seminar: (2 credits)

Research in advisor's laboratory: (1 credit)

Year 3

Fall Semester

One Elective Seminar: (2 credits)

Pre-Dissertation research in advisor's laboratory: (4 credits)
Students receive a $3500 stipend through work-study funds for working 35 hrs in the lab during June, July and August

Spring
One Elective Seminar: (2 credits)
Pre-Dissertation research in advisor's laboratory: (1 credits)
M.S. paper submission for publication and approval.

General Information

Grading and Evaluation

Tutorials and seminars are graded: A, B, C, D, F. Pre-dissertation or Dissertation Research are graded P or U. One 'D' or an 'F' is considered a failing grade and leads to academic probation. A minimum 3.0 GPA is needed to avoid academic probation. Two semesters of probation will be cause for dismissal from the program.

Thesis and Dissertation Costs

All grad students who produce a Ph.D. dissertation or an M.S. thesis should see Ms. Berger regarding binding fees and arranging to have their dissertations and theses Uploaded to "**D-Space**," the SUNY-wide digital repository.

Commencement and Graduation

In order to receive a degree at commencement, all Graduate Program requirements must be completed by April 15. Graduates are expected to attend graduation ceremonies.

College Administration (Who's Who?)

Graduate Program Staff: Zenia Tarkiewicz and Debra Berger
President: David Heath
Dean and Vice President for Academic Affairs: David Troilo
Vice President for Clinical Affairs: Richard Soden
Associate Dean for Graduate Studies and Research: Jerry Feldman
Dept. Chairs: John Picarelli (BioScience); Robert Duckman (Vision Science); Mitch Dul (Clinical Science)
Students Services (11th floor); Personnel (9th floor); Business Office (9th floor)

Travel for Conferences

All graduate students will be supported to attend a maximum of two scientific conferences per year (max. $500 and/or registration or membership costs) if they are presenting a paper or poster as first or second author.

Patient records

All graduate students using clinical patients as research subjects must also complete HIPPA, infection control, a physical exam, and other requirements as described by the Office of Clinical Administration.

Educational Technology

All graduate students requiring computer services may contact the IT Department.

IRB, IACUC and Conducting Research

All graduate students using human subjects in research must follow all the guidelines relevant for IRB approval, and must also complete the CITI and RCR research ethics training course.
All graduate students working with animals as research subjects must complete all BRS (see Ms. Dawn Conover on the 17th floor) requirements, including a health exam.
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Research Costs

All graduate students requiring funding support for their research projects (supplies or funds to pay research subjects) may obtain the appropriate request for approval for graduate student funding form from Zenia (15th floor).

Associations (Graduate Student) & Committees

Full-time graduate students are members of a Graduate Students Union (see personnel or your Graduate Student President for details), the Graduate Students Committee, and may be assigned to other College committees.

College Handbook and the Grievance Process

All graduate students are guided by the policies of the College Handbook with respect to grievance procedures. A copy of the Handbook may be obtained in the Office of Student Affairs.