UHCO Graduate Program Handbook

Fall, 2016

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Welcome

Welcome to the University of Houston College of Optometry's Graduate Program in Physiological Optics. We hope this booklet will help you to become acquainted with the Graduate Program, UHCO, and perhaps Houston as well. Graduate students are assigned “siblings” to assist their smooth acclimation in the Graduate Program.

The College Address is: J.D. Armistead Building, 4901 Calhoun Rd., Houston, Texas 77204-2020

Questions and concerns may be referred to:

Renee Armacost, Graduate Program Manager, rrattelade@uh.edu, 713-743-1885, (Room 2115).

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The College of Optometry Buildings

The College is housed in two buildings that are connected on the 1st, 2nd, and 3rd floors. The original building, J Davis Armistead (JDA) was designed specifically to serve as an optometric education and research center. It was completed in 1976, and it contains more than 133,000 square feet in three floors.

A new six story building, the Health and Biomedical Science Building 1 (HBSB1) opened in 2013. It will be described in a later section after JDA.

J Davis Armistead building (JDA).

1st Floor

The first floor includes a large reception area, vision analysis clinic, vision therapy clinic, contact lens clinic, ocular pathology clinic, neuro-ophthalmic clinic, pediatric and geriatric clinics, photography and audio-visual center, and optical dispensary. Each utilizes the most modern vision instrumentation. The teaching clinics occupy 50,000 square feet and are furnished with the latest ophthalmic instruments and diagnostic systems, for example: visual field analyzers, spectral domain optical coherence tomography, nerve fiber analyzers for retinal studies, corneal topographers and confocal microscope, and a combined A scan/B scan instrument.

2nd Floor

The second floor includes business offices, faculty and staff offices, graduate student offices, and faculty research labs (including: The Visual Optics Institute (VOI) which houses the lathe for wavefront guided production of contact lenses, other labs for testing, in normal human subjects and patients, of cortical visual evoked potentials (VEPs), electroretinograms (ERGs), eye movements, and accommodation. There is wireless throughout the floor, and there are library services, three student lounges, two of which have refrigerators and microwave ovens, several classrooms and study areas, and five teaching laboratories. Two of the classrooms provide amphitheater seating and excellent audio and projection services for laptops as well as a resident PC. The other classrooms and the labs also have projection facilities for laptops. Faculty offices are designed to provide a pleasant atmosphere for faculty use. The Optometry Library provides open stacks, an audio-visual room, seminar room, periodical room, and study rooms, as well as, PCs and Macintosh computers with access to the Internet. Its collection includes nearly nine thousand text and reference volumes representing the specialized areas of optometry and vision science.

3rd Floor

The third floor contains additional graduate student offices and faculty research laboratories. Each graduate student is given access to a network computer, with internet and email access to provide state of the art hardware and software tools for research. An electron microscope is used for ultrastructure studies, a confocal microscope for immunohistocytochemical studies, and eye trackers for eye movement studies and optometers for accommodation studies are housed on the third floor, as well. An adaptive optics scanning laser ophthalmoscope and a flood illuminated

adaptive optics ophthalmoscope are present. Particular areas of ongoing research include: studies of amblyopia, eye-movements, wavefront aberrations, refractive error, visual development and plasticity, retinal and cortical processes, structural and functional changes in glaucoma in animal models, cellular and molecular biology of vision, toxicology of vision, corneal anatomy and physiology, ocular surface wound healing and immune response, dry eye, single cell neurophysiology, visual psychophysics, and histology, including light, confocal and electron microscopic studies.

Health and Biomedical Science Building 1 (HBSB1).

HBSB1 is a six story, 167,000 sq ft, facility.

1st and 2nd Floors

The first two floors, the UHCO Vision Institute, house an ambulatory surgical eye center, classroom and conference areas, and clinical and translational research laboratories.

3rd and 4th Floors

The 3rd and 4th floors house neuroscientists, computer scientists, psychologists, and a large Institute, Texas Institute for Measurement, Evaluation, and Statistics (TIMES) that provides statistical support for many projects.

5th and 6th Floors

The 5th and 6th floors are AAALAC and OLAW approved rodent (5th) and nonhuman primate (NHP) vivariums (6th). Five optometry faculty who work with NHPs also have research labs on the HBSB 6th floor.

Technical Services

The Technical Services group of the University of Houston, College of Optometry is charged with providing technical support to the faculty of the College. The group is comprised of four different sections: audio visual, computer, machine shop, and the electronics shop.

Graduate students are encouraged to consult with Technical Services personnel to determine the most efficient way to accomplish a particular technical job, such as designing and ordering the video, photography, and visual aids for a dissertation or lecture. Exposure to the design and fabrication of research apparatus, using the various tools and skills available in Technical Services,

will increase graduate students' awareness of the breadth and depth of instrumental techniques available to them as investigators.

Within the AV section, currently housed on the first floor, there are qualified personnel available to support the College with AV production capabilities for classroom and research such as: posters, displays, signs, technical illustrations, and mechanical reproductions. Computer generated graphics, video production and editing, as well as a photographic services are also part of the resources. Another service of the AV Department is setting up and maintaining the classroom projection facilities, VCR's, and audio equipment.

Computer software and hardware support for graduate student computers is provided by the 3rd floor computer support team (Room 3357), as necessary. Software development courses for graduate students are offered at the college or may be taken in other colleges in the University. In addition, the Core Grant provides an application development team to assist laboratories in developing customized software for their research needs. The 2nd floor Professional Student Computer Room (located in the Library) is also available to graduate students. All of the computers in the library have access to the Internet. The full-time computer staff are responsible for maintaining these systems.

The machine shop has two band saws, two drill presses, milling machine, lathe, shaper, disc/belt sander, a 3-D printer and a maximat lathe/mill combination.

Custom electronic equipment as well as replacement hardware may be obtained from the electronics shop.

Access to some of the equipment in each of the areas is limited to the individual responsible for that area: for example, the lathe and the milling machine in the shop are used only by the College's chief laboratory machinist. *The personnel of Technical Services, however, welcome the opportunity to train graduate students in the safe and efficient use of the other devices in the various working areas.* Except in extraordinary circumstances, graduate students will be expected (after adequate training and instruction) to perform their own technical services work.

General Information about the Graduate Program

This handbook is intended to serve as a guide to the graduate student in the College of Optometry Graduate Program in Physiological Optics/Vision Science. It provides a basic blueprint for progression toward a graduate degree and should be consulted frequently in planning your program of study. It is a supplement, not a substitute, for the *Graduate and Professional Studies Catalog* of

the University of Houston. In the *Graduate and Professional Studies Catalog*, the Graduate Council policy statements answer most questions you will have, especially those pertaining to specific degrees.

This handbook covers the basic elements of the route toward the graduate degrees offered in Physiological Optics at the University of Houston College of Optometry: the Master of Science and the Doctor of Philosophy. It attempts to answer the questions which have occurred most frequently and to direct your attention to issues which have caused difficulty in the past. Obviously, every question that may arise cannot be anticipated. In dealing with your academic problems, you should do the following:

(1) Consult the University's *Graduate and Professional Studies Catalog* to determine the University's Graduate policy;

(2) Consult this handbook to determine specific application of the UH Graduate policy to the Graduate Program in Physiological Optics;

(3) Discuss any issues with your Committee Chair and/or the Director of the Graduate Program; and,

(4) If a judgment on the problem which concerns you cannot be achieved otherwise, your Committee Chair will refer the question to the Graduate Faculty. On such matters, please do not bypass your Committee Chair, who should act as your agent. Official interpretations of policy of the University graduate programs are made by the Graduate Council, but it is appropriate that matters requiring special rulings or requiring action be handled through the Thesis or Dissertation Committee Chair, Director of the Graduate Program, and Dean of the College.

The basic responsibility for planning and completing a program of graduate study rests with the student; the Committee Chair's role is merely that of advisor and counselor. The Chair must be kept informed of your plans and intentions, but at no time should you become dependent on the Chair for the initiative in carrying out the program of graduate study. It is also important that the Director of the Graduate Program be advised of your plans, since official administrative records are kept in that office.

Content Area of Physiological Optics

The graduate program in Physiological Optics is oriented toward the study of basic and applied visual processes, including the physical, physiological, and psychological aspects of vision. It is designed to prepare graduates of the Optometric curriculum, or those with a Bachelor's degree in a science related to vision, for a career in teaching and research in optometry and/or vision science. Principal career opportunities exist in educational institutions, research institutions, industry, military

and government laboratories, and specialized optometric practice. The Graduate Program in Physiological Optics is under the administration of the University of Houston College of Optometry.

The faculty biographical sketches indicate the variety of graduate student interests which can be met (see page 30). In addition, students interested in other disciplines, e.g. biology, electrical engineering, psychology, pharmacology, and computer science can enroll in courses in these areas. For graduate students interested in children with reading disabilities, dyslexia or developmental problems, an excellent selection of courses is available from the Department of Special Education, College of Education, and the Department of Psychology. It is also possible to take courses at the institutions in the Texas Medical Center, e.g. biostatistics in the UT School of Public Health.

Graduate Programs Offered

The College of Optometry offers graduate courses leading to the degrees of Master of Science and Doctor of Philosophy.

The Master of Science program is a general unspecialized program. The curriculum and its requirements are planned to serve the needs of students who expect to continue to the doctorate as well as those who may desire only a Master's degree. Students seeking only a Master's degree may plan their programs to allow the degree of specialization in certain applied skills that they may desire. It is the intention that the Master's program should provide a fundamental background in the field of Physiological Optics, broadly conceived.

The Doctor of Philosophy program is based on recognition that individuals must, in addition to mastering the content area, prepare themselves for successful careers as educators and researchers. The program distinguishes, sometimes arbitrarily, the academic content of physiological optics as a discipline from the skills, techniques, and methodologies required for work in specific career areas. It is the intention of the program that its doctoral graduates, regardless of their area of specialization, should first be well-rounded and informed teachers and scientists. Special attention is given, then, to a fundamental background in general physiological optics. In their academic work, students must demonstrate reasonable mastery of physiological optics as a whole, and outstanding mastery of specialized, usually related, areas.

Assistantships, Scholarships, & Fellowships

Attempts are made to provide financial support or aid to all full-time graduate students in the Graduate Program in Physiological Optics. Graduate students must enroll in at least 9 hours to be considered full-time.

Several forms of financial aid are available to graduate students in the Physiological Optics Graduate Program. Certain fellowships may not provide stipends to the limit allowable by the University of Houston. In these cases, additional college funds will supplement the fellowship award to the limit of the allowable UH graduate student support. Veterans Administration benefits will not be considered when graduate student fellowships are formulated. A concise description of various graduate student support programs follows:

1. UH Graduate Teaching Fellowship: Graduate students who have student contact in an instructional setting and who have primary responsibility for teaching a course for credit. They must have completed a minimum of 18 semester hours of graduate credit in their teaching field, must be in good standing, and must be making satisfactory progress toward the degree. They may be listed as the instructor of record.

2. Graduate Teaching or Instructional Assistantships: Graduate students who have student contact in an instructional setting as part of their assigned job duties and who perform under a faculty member's direct supervision. They must be in good standing and must be making satisfactory progress toward the degree.

3. Graduate Research Assistantships: Members of the faculty who hold research grants or contracts may employ one or more Graduate Assistants at stipend levels agreed upon by the University, granting agency, and the principal investigator. Appointment to these positions is made directly by the principal investigator of a particular grant or contract research program.

4. Graduate Program Assistantships: Graduate students who do not have student contact in an instructional setting but who assist with academic programs or projects under a faculty member's direct supervision.

5. NEI (or NIH or NSF) Fellowships, and Grants: Pre- and post-doctoral fellowships in various forms are available. As announcements are received, they are distributed to the graduate faculty and graduate students for information and subsequent application.

All of the programs for financial assistance described above are available **only** to **full-time** students admitted to degree programs. Additional sources of financial assistance may become available to graduate students. Inquiry should be directed to the Director of the Graduate Program regarding additional sources. Graduate students are encouraged to apply for these fellowships. Several benefits are accrued, such as: evidence of support from peer review can assist in further grant

support for the student as well as the College, a higher level of support, and additional funds for travel, supplies and small items of equipment.

Graduate Student Travel: The Graduate Program Office has limited funds to support graduate student travel to encourage attendance at scientific meetings. The dollar amount of support is determined by the number of students requiring support and the amount of money budgeted each year. Those presenting a paper or poster may receive more money than those who do not present.

Curriculum

Master of Science in Physiological Optics Course Requirements

All of the following core courses:
PHOP 6241 - Basic PO/VS Part 1
6242 - Basic PO/VS Part 2
6152 - Basic PO/VS Lab (This may be included in 6243)
6243 - Basic PO/VS Part 3

6 hours total

Two of the following advanced module courses
PHOP 7241 - Pathophysiology of the Anterior and Posterior Segments
7242 - Visual Neuroscience
7243 - Optics and the eye

All of the following Basic Research Skills:
PHOP 6275 – Professional Development in the Visual Sciences
6372 - Experimental Quantification in Visual Sciences
6371 - Experimental Design in Visual Sciences

11 hours total

Each Semester:
PHOP 6160 - General Seminar in PO/VS

Electives:
As needed to strengthen student's education in a particular research area (see detailed list of elective courses below).

Research practica, laboratory practica, and independent study are offered on an "as needed" basis to meet the individual needs of students.

Courses total minimum of 30 semester hours, including written thesis. Master of Science Degree students are ordinarily expected to accomplish independent research under the supervision of a committee and write and defend a thesis for the degree.

Doctor of Philosophy in Physiological Optics Course Requirements

All of the following core courses:

PHOP 6241 - Basic PO/VS Part 1
6242 - Basic PO/VS Part 2
6152 - Basic PO/VS Lab
6243 - Basic PO/VS Part 3
6244 - Basic PO/VS Part 4
6152 - Basic PO/VS Lab

10 hours total

All of the following Basic Research Skills:
PHOP 6198 - Ethics in PO/VS ((As of Fall 2010, IDNS 6391 2010 and 2011, instead)
6371 - Experimental Design in Visual Sciences
6372 - Experimental Quantification in Visual Sciences
XXXX - Language or other approved skills course
(6275) - Teaching in the Visual Sciences

11 hours total

Each Semester:
PHOP 6160 - General Seminar in PO/VS

Electives (minimum 5 hours required):

PHOP 7276 - MATLAB Programming for Vision Science

Courses total minimum of 60 semester hours, including written dissertation. This track includes a foreign language and/or technical skill, written and oral qualifying examinations, original research, and defense of a dissertation.

First year: Core Program Timeline

Fall		**Spring**	
Basic PO Core Part 1	2 hrs	Advanced Module	2 hrs
Basic PO Core Part 2	2 hrs	Advanced Module	2 hrs
Basic PO Core Part 2	2 hrs	Experimental Design	3 hrs
Professional Devel.	2 hr	Tutuorial or rotation	1 hr
General Seminar	1 hr	General Seminar	1 hr

Summer

Statistics	3 hrs
General Seminar	1 hr
Tutorial or Rotation	2 hr

For Phd students, upon completion of the above required courses:

Qualifying Examinations:

written (after completion of first year, in August)

oral (5th-8th semester)

Language/Technical Skill:

statistics

electronics

foreign language

computer programming

bioimaging

or other if approved by the Associate Dean and Mentor

The PhD Qualifying Exam in Physiological Optics

Purpose of the Exam

The purpose of the qualifying examination is to evaluate whether a student in the PhD program in physiological optics should be advanced to candidacy and permitted to proceed with doctoral research. This decision should be made as early as possible in the graduate student's career. The examination should evaluate the following, which are taken to be necessary prerequisites for the conduct of doctoral research:

1. Factual knowledge in the broad area of physiological optics,

2. Depth and breadth of topical knowledge,
3. Integration of knowledge from diverse areas to solve problems,
4. The ability to think and respond effectively on one's feet.

To meet these requirements, the qualifying examination consists of separate written and oral portions. The written examination is intended primarily to evaluate basic understanding of experimental design and statistical analysis as covered in required courses, as well factual knowledge of material in the core curriculum. Because questions cover the whole of the core curriculum and are generated by a cross section of the graduate faculty, an important part of the examination is to determine whether the student can discern which factual information is needed to answer a particular question. If constructed properly (which is a challenge to the faculty and Associate Dean), the written qualifying examination can also examine how well the student can integrate material presented separately in different core courses and in different sections of the same course.

The subsequent oral examination focus on depth of understanding of the student's chosen area of research, the ability to generate a research proposal in that area, and the student's capacity to think and respond on his/her feet. The student will be evaluated on success in acquiring in-depth knowledge and the integration and application of this knowledge. The focus of the oral examination should be whether the student, if advanced to candidacy, is likely to generate and complete experiments that will lead to significant advancement of knowledge.

The Written Examination

The written part of the qualifying examination should be taken after completion of the first year in the graduate program, typically before the beginning of the next academic year. By this time the graduate student should have completed all of the didactic material in the core curriculum (i.e., the basic PO/VS courses). The courses covering this material will therefore be offered to graduate students on a yearly basis.

Written examinations will be offered as needed. Ordinarily, students enter in the Fall and will take the written examination the following Summer. If a sufficient number of students indicate readiness or if an appropriate contingency arises, an additional written examination may be scheduled.

The Chair of the Written Examination Committee will solicit from the graduate faculty a number of questions to examine basic factual knowledge in each of the several topical areas of the areas covered in the basic PO core courses. Since part of the rationale for the written qualifying examination is to

foster integration of material within and between areas of vision science, questions will be written collaboratively by the qualifying exam committee.

The written examination will be constructed by the examination committee according to the following guidelines:

1. 50% of the questions on each written exam should cover material from the comprehensive courses, Fall and Spring, in PO.
2. 17% of the questions, on material from Experimental Design, and Statistics.
3. 33% of the questions on material from the Advanced Modules

It is expected that at least 2 half days of 5 hours each will be allocated for students to complete the written examination. After the examination each question will be graded promptly (pass, not pass). Each question is graded by two faculty members with knowledge in the fields associated with the particular question. A failed question is one in which both graders give a non- passing grade. A contingently passing grade is obtained when basic knowledge is demonstrated in some but not all areas covered by the question, but the deficiencies are not so severe as to lead to a failure. Contingent passes may be corrected by meeting with the graders and correcting the answer appropriately as determined in the meeting. Students are required to pass all portions (not questions) of the examination on either the first or second attempt. If a second attempt is necessary, it should generally be taken with the subsequent Fall term, and will include only the areas not passed on the first attempt. However, initial failure of more than 50% of the questions will result in a full reexamination. Two failures of one or more questions is cause for dismissal from the PhD degree program.

Students are encouraged to seek the help of faculty members who teach and do research in areas covered by the exam. After the written examination has been graded, the student's performance will be communicated to the student by the exam committee. The student will be notified of his/her areas of strength and weakness, and any parts of the examination that must be re-taken will be identified.

The Oral Examination

Students in the PhD track should plan to take the oral qualifying exam between the 5th and 8th semester in the graduate program. The chair of the oral qualifying committee is generally the mentor/advisor of the student. The student, the chair and the Associate Dean will confer to appoint the remainder of the committee, which will consist of at least 3 members (including the chair) who are experts in specific areas of physiological optics and vision science, or related fields, in which the student intends to obtain in-depth knowledge. Three areas of knowledge to be assessed in the exam, which are related to the committees

expertise will be listed on the appointment form One or more of the committee members may be appointed from outside the College, particularly if the student is seeking knowledge in a (minor) area for which expertise is not available within the College. However, at least the chair and one other member of the committee (excluding the Associate Dean, who may choose to be an ad hoc member of any qualifying committee) must be a College of Optometry graduate faculty member. It is often the case that the student has done special problems and/or a research practicum with committee members. When the committee is appointed, a timeline for completion of the exam should be determined.

Prior to the exam student will study to acquire the knowledge in the areas listed on the committee appointment form. The student also will prepare a short grant proposal, generally on the topic of the student's ongoing research. The grant proposal will (at the very minimum) follow the format for SVRSG applications (2009 was a 5 page research plan). But any advisor who wishes to use a longer format such as the new RO1 format (12 page research plan + 1 page specific aims) can do so. The choice of format must be selected when the oral qualifying committee is appointed and will be recorded on the same form used to appoint the committee.
The student will distribute this proposal to the faculty members two weeks prior to the set time of the examination.

Evaluation of the oral qualifying exam has 2 parts:
1. Quality of the short grant proposal.
2. Oral defense of the proposal, the research that the student is doing, and a demonstration of knowledge in the 3 areas defined for the exam.

Every effort shall be made to hold the oral portion of the qualifying examination in the time frame agreed upon when the committee is appointed. Of course, the examination can be postponed as demanded by extenuating circumstances, but postponements are expected to be the exception rather than the rule. The rationale for setting a deadline at the outset of preparation and holding to it is to avoid extending the qualifying process over a protracted period of time.

The entire committee should be present at the oral examination. Format of the examination is left to each committee to decide. The acquisition of in-depth knowledge and the integration of this knowledge will be assessed during the oral qualifying examination. It should also be kept in mind that the purpose is to determine whether the student, if advanced to candidacy, is likely to generate and complete experiments that will lead to significant advancement of knowledge. Performance on the prior written examination may be taken into account.

Upon completion of the oral examination, the qualifying committee will decide and inform the student whether he/she has passed, not passed (requiring a single re-examination), or failed. Failure requires dismissal from the graduate program, as does not passing the oral examination on a second attempt. An "in progress" decision is not permitted.

Because of the small size of the oral qualifying committee, the decision that it reaches must be unanimous. The Associate Dean, at his/her discretion, may or may not vote; it is expected that the Associate Dean will register a moderating vote if the examination committee is disposed to act with undue leniency or harshness. Reasonable effort to reach a unanimous decision is expected but, if a unanimous decision cannot be reached, the student will be advised and each committee member and the Associate Dean will prepare a written statement within 3 days indicating his/her vote and explaining the reasons. In case of a split vote, a decision will be made by a standing adjudication committee of at least 8 faculty members (the Qualifying Committee and the Graduate Review Committee), from which any faculty who participated in the examination in question shall be disqualified. The adjudication committee will receive and consider the written reports of the members of the qualifying committee and the Associate Dean. The committee may solicit other evidence or testimony regarding the qualifying examination itself (but not other aspects of the student's graduate career) as it deems necessary. A graduate student representative will be present to observe, but will have no vote (primarily to protect the representative from unavoidable criticism). The outcome of the adjudication process need not be restricted to pass, not pass, or fail; each case must be heard on its merits and the action recommended must be as fair as possible to all concerned. As a last resort, a new committee may be appointed (from which original committee members and the Associate Dean may be excluded) and the examination repeated. Because of possible student anxiety, it is imperative that the adjudication process be carried out as quickly as reasonable conduct permits and within a period not to exceed 14 days.

Successful completion of the oral examination completes the qualifying process and the student is then advanced to candidacy for the PhD. At this time it is appropriate for the dissertation committee to be appointed and for the student to begin his/her dissertation research. Research experience prior to completion of the qualifying process is encouraged; however, this research should be aimed at learning particular research techniques, identifying an area of special interest, or evaluating the feasibility of an area of research. Failure to undertake the two parts of the qualifying in accordance with the times described above will cause the Graduate Student Review Committee to meet to determine whether the student is making satisfactory progress in the graduate program. It is the responsibility of the Associate

Dean to encourage students to meet program requirements on schedule, monitor adherence, and call meetings of the Graduate Student Review Committee when necessary.

A schedule for meetings with the dissertation committee is outlined in the section entitled, “Steps in completing a doctoral dissertation. In a sense, the last meeting, the dissertation defense is an extension and the culmination of the qualifying examination process. This view of the defense implies it is substantially more than a vehicle for the student to inform faculty and peers about the dissertation project. At the defense, the student should present his/her dissertation research and receive address questions from the audience in a public setting. Then in a closed meeting, the candidate be examined and challenged by the appointed research committee on in-depth understanding of the completed research and on how this work fits into the broad fabric of vision science.

Foreign Language/Skills Examination

All PhD candidates must demonstrate competence in one of the following Language/Skill areas, or a new area that is timely and approved by the Associate Dean and Mentor:

1) A Foreign Language
2) Computer programming
3) Electronics
4) Statistics
5) Bioimaging

Foreign Language

The student meets with the examiner appointed by the Associate Dean. The examiner will conduct a preliminary inquiry to evaluate the student's present ability and to determine whether the student is ready to be examined. This level will be established by:

A. Evaluating an oral translation of a short passage into English,

B. Assessing the student's familiarity with scientific terminology in the student's area(s) of interest in vision.

2. In order to satisfy the requirement of translating from the foreign language into English, the student shall show satisfactory performance on an examination carried out under the supervision of the examiner. This examination will consist of:

   A. Oral translation of a scientific passage of approximately 250 words.

   B. Written translation of a passage of approximately 250 words on a topic in vision science/physiological optics. The use of a dictionary will be permitted during the written portion of the examination. The written examination shall be completed within 2 hours.

3. The examiner will evaluate the adequacy of the student's performance.

4. A copy of the original documents used in the examination, the student's written translation with any examiner corrections, and the examiner's written evaluation of both the written and oral translations shall be forwarded to the Associate Dean within one week after completion of the examination. These materials will become part of the student's record.

Computer Programming

PhD students wishing to demonstrate proficiency in a programming language to fulfill the graduate program language/skills requirement are evaluated using the guidelines below.

The student must complete a computer programming project that incorporates fundamental and advanced programming concepts. All of the listed fundamental concepts and one advanced concept must be incorporated. Advanced concepts may be taken from the list below or determined jointly by the faculty examiner and the student. The project must be distinct from software written for a course under the Physiological Optics curriculum, but may be related to thesis hours. Research goals may require adaptation of existing source code, written by another programmer. In such a case, the student's adaptations must demonstrate understanding of the required concepts and significantly alter the software.

Fundamental concepts:

1. Conditional branching and/or looping
2. Use of an array
3. Use of subroutines or function calls
4. Parameter input (keyboard entry or file reading)
5. Screen or file output that depends upon parameter input.

Suggested advanced concepts:

1. Controlling an installed data acquisition of signal output card
2. Computational analysis
4. Development of a graphical user interface
6. Controlling peripheral devices
7. Image analysis

Electronics

Students wishing to demonstrate skills in electronics are required to design, construct, test, and demonstrate an electronic circuit. The student should have some competence in digital and analog design and in the mechanics of construction. The project will be judged by a knowledgeable member of the faculty with expertise in the area.

Statistics

Graduate students working toward the MS or PhD degree will, in taking the core curriculum, acquire fundamental statistical skills enabling them to use software) to:

1. Combine, transform, plot, and summarize data.

2. Test scientific hypotheses and estimate parameters (e.g. means, variances, and proportions) of one and two populations.
3. Determine the number of experimental units (e.g. subjects, patients, animals) needed to test hypotheses and estimate parameters.
4. Evaluate research data obtained from randomized-design experiments, two-factor factorial-design experiments, and simple linear regression and correlation studies.

PhD students wishing to offer a higher level of skill in statistics shall, in addition to the fundamental skills, demonstrate the ability to analyze and interpret research data from studies involving a simple response variable (dependent variable) and a number of independent variables (continuous, nominal, ordinal, or random). Use of statistical packages is required.

The examination shall be completed in six hours and will include:

a. Computer solution of research statistical problems.
b. For each problem, a short essay that includes an interpretation of the computer printout particulars and a summary of the major results and conclusions.

The research statistical problems, the relevant computer printouts, and the essays shall be forwarded to the Associate Dean along with the examiner's evaluation within one week of the completion of the examination. These materials will become part of the student's record.

Bioimaging

The student will a demonstrate t knowledgeable faculty at UH or in a training course that the student attends, competence in tissue preparation and use of the confocal microscope, the electron microscope, and image processing software.

Other PhD Requirements

Teaching: The activities of an individual with a PhD usually require the organization and presentation of research, teaching, and/or clinical materials before different groups. Therefore, candidates for the PhD are encouraged to experience classroom teaching.

Research: Research constitutes an integral component of the graduate program. Graduate students are expected to be engaged in independent research or research under the supervision of the graduate faculty during all phases of the program. All PhD candidates must engage in independent research under a dissertation committee and write a dissertation for the award of the degree.

Theses (MS) & Dissertations (PhD)

With the conviction that research skills are vital to all fields of professional function in contemporary vision science, the Graduate Program in Physiological Optics requires the demonstration of such skills as an important aspect of each of its degree programs. The student must execute an independent research study under faculty supervision. These independent research studies fall into two categories: Master's Thesis and PhD Dissertation.

Steps in Completing a Doctoral Dissertation (Steps 1-5, Steps 6 onward are combined with instructions for completing a Master's Thesis)

STEP 1: Student will complete oral qualifying examination during 5th to 8th semester as described in the section above on qualifying examinations.

Step 2: The Dissertation committee must be appointed by the end of the semester following that in which the Oral Qualifying exam was successfully completed. The Dissertation committee should consist of 4-5 members, three of whom (the chair and two others must be faculty of the College of Optometry) and one of whom must be from outside the College.

Step 3: Dissertation Committee Meetings and Documentation

Around the time of formation of the dissertation committee, the student will provide the committee members with a 1-2 page document "Statement of Research Direction". This will lay out the general hypotheses, approaches and time line for proposed experiments for the following 6-12 months. If the student has not met with a research (or qualifier) committee for a year, a meeting should be scheduled to discuss the project described in the Statement of Research Direction. Revisions can be made to this document after the meeting. If the student has had a recent committee meeting, only consent to serve on the committee, from each committee member, after reading the Statement is needed. If a meeting is held, the student must secure approval (signature or email) from each committee member and before filing the Statement in the Graduate program Office. Filing of the final version of the Statement must occur within 2 weeks of the committee meeting. This document then serves as a formal record of what the expectations are for the next few months.

Within one year (ideally sooner rather than later) of the first dissertation committee meeting the student must provide the committee with a formal Research Proposal. This documents the major body of work they intend to complete. This proposal will be discussed with the student at a required meeting of the dissertation committee. Revisions can be made to this document after the meeting. The student must

secure approval (signature or email) from each committee member and then the Proposal is filed with the Grad program Office. Filing of the final version of the Proposal must occur within 2 weeks of the committee meeting. This document then serves as a formal record of what the expectations are for the dissertation research.

Step 4: Regular dissertation committee meetings must be held so that the committee can have input in to the student's progress. At the very least a committee meeting must be held once per year. But this can be at shorter intervals at the advisor's/student's discretion. After each meeting the advisor will complete a "Progress Form" and write a brief summary of the students progress since the last meeting and the short term research goals (discussed at the meeting) for the next meeting. The student must secure approval of this "Progress Form" (signature or email) from each committee member and then the form is filed with the Grad program Office. Filing the final version of the form must occur within two weeks of the committee meeting. This document then serves as a formal record of what the expectations are until the next meeting. (Note "Progress Form" does not have to be completed for the very first committee meeting (the approved Statement of Research Direction will serve as documentation for that meeting) or for the meeting at which the Research Proposal is discussed (the approved Research Proposal will serve as documentation for that meeting).

This is the general sequence of events but as always exceptions can be made (with the permission of the Assoc Dean for Res) for extenuating circumstances (e.g. OD/PhD).

Step 5: The Graduate Program Office will play an active role in ensuring students and their advisors stay on track. Each student entering the program and all graduate faculty will be sent a short document that summarizes the time lines and expectations, thus no-one can claim they "did not know". Also the Grad Program Office will send out reminders of upcoming milestones and chasing up students (and advisors) by email or in person if the deadlines are not being met.

For Responsibilities of the Committee, Chair and Student, see step 6 B, of the Master's Thesis section. Instructions for completion of the Thesis or Dissertation following in later steps.

Steps in Completing a Master's Thesis

STEP 1: *The student selects a general research area.* This usually takes place during basic PO during the first two semesters. The student should decide which areas he or she is interested in; this is a good time for talking to other graduate students and faculty members.

STEP 2: *The student discusses research interests* with Associate Dean for Graduate Studies/Research. This should be about the time the student registers for the third semester. At this time it might be a good idea for the student to register for at least one special problems course with a faculty member in the area of the student's general interest, or perhaps a lab rotation in that faculty member's lab. The student and Associate Dean identify potential research advisors.

STEP 3: *The student meets with potential advisors* to discuss some research questions in the area. This should be during the third semester; for example, a special problems course during the summer, or again a lab rotation. It could be just a one-hour reading course, but students are strongly urged to do this by the fourth semester.

STEP 4: *The student and Associate Dean meet to select a research advisor,* who must be a member of the graduate faculty with special interests closely related to the proposed thesis topic. This should be the result of meeting with the potential advisors (step 3, above). The advisor and student meet with the Associate Dean to *select additional committee members* (preferably with one faculty member from a department outside the College of Optometry). The Associate Dean officially appoints the Thesis Committee. This should happen during the fourth semester. Each committee member should be selected for some special contribution. If needs change (should be constantly monitored by student and chair), then the committee membership should change. This is basically an automatic change, at least until the formal proposal is submitted. To modify committee membership before the formal proposal is signed, the chair must notify the Associate Dean, who will reformulate the committee.

STEP 5: *The statement of research direction.* Before the end of the fourth semester, the student and the committee meet to identify:

a. The general problem
b. The specific experimental question
c. The significance of answering the question
d. The general methodology

These items form the statement of research direction. For some people the process will include pilot projects; for others, there will be more concentration on literature review. The Committee

closely monitors the student's progress on all preliminary research activities to assure that the project neither languishes nor progresses beyond the pilot (preliminary) stage before the formal research proposal is prepared. The Committee monitors the student's progress and meets with the student on a regular basis. During these meetings the student briefs the Committee on the progress of the research.

STEP 6 A: *The formal research proposal.* The student consults with his/her Committee in preparing a formal proposal that includes information such as:

a) an explicit statement of the general problem
b) the specific experimental question to be addressed
c) significance of the research
d) review of relevant literature (and bibliography)
e) specification of the experimental subjects
f) specification of methods and procedures
g) modes of analysis
h) anticipated results
i) possible interpretations

The committee meets with the student to approve the formal proposal. A copy signed by all Committee members of the approved proposal is submitted to the Associate Dean to be placed in the student's file. This proposal should be submitted to the Associate Dean by the end of the 6th semester.

Students will be required to have progress meetings with their respective thesis committee at least once every six months. The student is responsible for arranging the meetings and for turning in to the Graduate Program Office a completed sign-off sheet, whereon the committee will indicate progress, before the end of each six-month period.
Failure to provide the Associate Dean with the statement of research direction, thesis proposal, or the sign-off sheet according to the schedule specified above will cause the Graduate Student Review Committee to meet to determine whether the student is making satisfactory progress in the graduate program. It is the responsibility of the Associate Dean to encourage students to meet program requirements on schedule, monitor adherence, and call meetings of the Graduate Student Review Committee when necessary.

Step 6 B: Responsibilities (for Thesis/Dissertation):

The Committee gives guidance and constructive criticism on research procedures as well as in the preparation of the dissertation. The Committee is expected to:

a) assist the student in formulating the research proposal,
b) approve the student's written proposal,
c) help the student overcome problems encountered in conducting the research,
d) provide guidance to the student in writing the dissertation,
e) conduct the student's defense of dissertation, and
f) approve the dissertation.

Committee members should lead the student through the research process, by frequent interactions with all committee members and the student in such a way that the student is not given solutions but develops the tools needed to repeat the process on his or her own. The student should not be alone during the process, but develop the skills ***with*** his or her committee to be prepared to do independent research in the future.

The Chair should:

1. Lead the student through the process of identifying a problem worthy of research - and developing logic on approaching that problem.
2. Help the student limit the scope of the project.

The Student is responsible for keeping all committee members informed of experiment results. This could be handled by both individual meetings as well as by regular committee meetings.

STEP 7: *Execution and writing of the thesis/dissertation.* The actual execution of the research is carried out by the student independently, although presumably with frequent consultation with the Thesis Committee. Procedural modifications within the general framework of the proposal may occur with Committee approval, although the student is expected not to depart drastically from his or her proposal.

The format of the thesis follows acceptable standards of scientific and scholarly writing in the discipline. As an added guide, reference may be made to A Manual For Writers of Term Papers, Theses and Dissertations (K. L. Turabian) or to A Manual of Style (The University of Chicago

Press). It is the primary responsibility of the candidate and, secondarily, the Thesis/Disseratation Committee that the thesis has the correct form and is grammatically correct.

STEP 8: *Thesis/Dissertation defense*. The final oral defense of the MS thesis of the PhD dissertation is normally scheduled by the student and the Chair of the Thesis or Dissertation Committee at a time in agreement with all members of the Committee. The candidate **MUST** distribute complete corrected copies of the thesis or dissertation to all committee members **at least two weeks in advance of the date of the defense.** At that time the abstract, placed on the appropriate announcement form, requested from the graduate office, must be submitted to the graduate office for distribution. The defense is open to the entire academic community and notification should be made to the appropriate Colleges and Departments within the University.

Thesis/Dissertation Binding Information

Each student is responsible for the cost of any hard copies of the draft for his committee members prior to the defense, and for all but one of the copies of the final thesis or dissertation to be submitted for binding.

There must be one (1) bound copy (original) for the Library. The University requires that every student submits the final electronic thesis or dissertation in a PDF through the Vireo system. Before submitting the thesis/dissertation for binding and to Vireo, the student must include the following items in this order, as required by the University of Houston, and verify with the Associate Dean for Graduate studies that the submission is acceptable:

1. Cover Sheet (one blank sheet of paper at the beginning of each copy).
2. Copyright Page (Copyright by . . . , month, and year of graduation)—optional.
3. Title/Signature Page (Sample supplied by the Grad. Program Ofc).
4. Dedication (optional).
5. Acknowledgment (preface or foreword)—optional.
6. Abstract Title Page (Show the month and year of graduation). – have skipped this
7. Abstract: may not be > 350 words for the MS thesis or 600 words for the PhD dissertation.
8. Table of Contents.
9. List of Figures.
10. List of Tables.
11. Text.
12. Bibliography.
13. End Sheet (one blank sheet of paper at the end of each copy).

A. **Electronic Copy:** An electronic version (PDF) of the Thesis/Dissertation must be submitted to the University archive (Vireo). Please get instructions from the graduate office (RRattelade@UH.EDU). Approval of graduation, which means that the degree is official, will not occur until the PDF is submitted.

B. Hard Copy (required by Optometry library only).

Type of Paper for library copy: Use at least 20-pound, 8.5 X 11 white bond with at least 25% rag content for the original and one copy. (the Graduate Office has paper available for purchase by students for this copy; Neena Bond 02717).

Other copies should be prepared on at least 13-pound paper. In general, xerox quality duplication is an acceptable means of duplication for the additional copies.

Font Size: Font size must be 12 point (Times Roman, or equivalent, e.g. Arial 11) and print should be black, with consistently clear and dense characters. Text should be double spaced.

Margins: Left 1.5 inch Right 1 inch

Copyright: Copyright is not an automatic process. If desired, the student may request that the thesis/dissertation be copyrighted by signing the appropriate section on the University Microfilms Agreement form.

Preparation for Binding: Bind each copy separately by using rubber bands, both horizontally and vertically, to secure pages. Stack the copies together and put an additional copy of the title/signature page on top of the stack. On this page, circle in red ink the title of the thesis/dissertation, author's name, and date of graduation (This information is printed on the covers of the bound copies). On the lower right-hand corner of the page, print the number of copies in the stack.

Fees: The Graduate Program will pay for binding of one copy, plus the pick-up and delivery charge. Copyright fees and binding of additional copies for the student and/or committee must be paid for by the student. Fees are to be paid to the Graduate Program Office, Room 2115 and are listed as follows:

1. Binding: $45.00 per copy (may have increased)
2. Copyright: $65.00 (not usually done)

Forms: There are a number of forms which need to be completed when submitting the thesis or dissertation. Check this with the Graduate Program Office.

Graduation Information

Applications: Applications for graduation should be filed during the semester in which the student intends to graduate. You may apply for graduation through MyUH. Check with this office for the dates for submitting the application. There is a fee of $25.00 will be billed to the student's university account.

Commencement: Commencement usually takes place in mid-May for those who graduated the previous August or December or that May. Robes, hoods, etc. must be rented the week of graduation from Barnes & Noble Bookstore. Please notify the Graduate Office (room 2115) as soon as you know whether or not you will be able to participate in the commencement exercises. The graduation rehearsal is usually the day before the actual commencement.

Grievance procedure for graduate students

Step 1: Resolution of the grievance through informal efforts

Every effort shall be made by the graduate student and the faculty member(s) involved to settle their differences amiably and informally to redress the grievance. If appropriate or necessary, the Associate Dean for Graduate Studies shall participate in this informal effort to resolve this grievance. If appropriate, the aid of a disinterested mediator should be sought to aid resolution. A grievance involving the associate dean will begin with a similar process mediated by the vision sciences department chair or his/her designee.

Step 2: "Complaint" within 10 days

In the event that an informal resolution is not possible, the graduate student may petition the associate dean by filing a document, the "Complaint", within 10 days of the mutual decision that the grievance cannot be settled informally. The formal written "Complaint" must state (a) when he/she discovered the issue being grieved, (b) what issue is being grieved and the evidence to support the grievance, (c) the desired resolution, (d) the postal (not e-mail) address to which written communication may be sent. It is the responsibility of the grievant to notify the office handling the grievance of any change of address during the course of the grievance. After receipt of the "Complaint", the associate dean must respond in writing to the grievant within 10 working days.

Step 3: Formal written "Petition"

In the event that a resolution is not possible at the graduate program level (paragraphs 1 and 2 above), the grievant may petition the Dean of the College of Optometry, against which the grievance is held, or the dean's designee by submitting a formal written "Petition," appended to the written "Complaint" and the associate dean's written response, within 10 working days after the decision of the associate dean. The grievant may

include in his/her notice of appeal copies of any documentation that he or she considers useful at this point, but shall retain possession of the originals. The dean of the college must respond in writing within 20 days, and the response must include an explanation for his/her decision.

Step 4: Appeal seeking university level review by the Graduate and Professional Studies Grievance Committee (GPSGC), which is under the purview of the Dean of Graduate and Professional Studies

Please read the Grievance Policy and Procedures for Graduate, Professional, and Post-baccalaureate Students that can be found in the graduate catalogue: http://www.uh.edu/grad_catalog/

Research Supervisors and Their Interests

Heather Anderson, Associate Professor; OD, University of Houston, 2007; PhD, University of Houston, 2008. Accommodative function in preschool and school aged children, as well as individuals with Down syndrome

Raymond Applegate, Professor; OD, Indiana University, 1975; PhD, University of California, Berkeley, 1983. Visual Optics, ocular aberrations, cataract, refractive surgery, early disease detection.

Jan Bergmanson, Professor; PhD, City University, London, 1975; OD, Pennsylvania College of Optometry, 1982. Anatomy and pathology of cornea, corneal response to contact lenses, corneal wound healing and laser effects on ocular tissues.

David Berntsen, Associate Professor; OD, University of Houston, 2002; M.S., The Ohio State University, Vision Science, 2004; PhD, The Ohio State University, Vision Science, 2009. Myopia, contact lenses, and aberrations of the eye.

Alan Burns, Professor; PhD, University of British Columbia, 1993. Leukocyte migration in wounded cornea, inflammation, adhesion molecules, advanced light and electron microscopic imaging, morphometrics, cell culture.

Han Cheng, Clinical Professor; PhD, University of Houston, 1994, OD, University of Houston, 1998. Noninvasive functional and structural evaluation of the visual pathways under normal and pathological conditions.

Yuzo Chino, Professor; PhD, University of Syracuse, 1973. Neural plasticity; effects of abnormal visual experience on retinogeniculostriate pathways.

Vallabh E. Das, Professor. PhD, Case Western Reserve University, 1995. Development of visual and oculomotor function; Response properties of neural oculomotor circuits in strabismus.

Karen Fern, Associate Professor; OD, Pacific University, 1981. Vision development, assessing visual functions in preschool children, preschool vision screening.

Laura Frishman, Professor; PhD, University of Pittsburgh, 1979. Retinal physiology; retinal origins and cellular mechanisms of the electroretinogram (ERG).

Ronald Harwerth, Professor; OD, University of Houston, 1964; PhD, University of Texas, Houston, 1971. Psychophysics of vision, animal psychophysics, binocular vision; visual field defects from glaucoma.

Ruth Manny, Professor; OD, University of Houston, 1975, PhD, University of Houston, 1981. Development of normal and abnormal vision in human infants, preschool vision screening.

Jason Marsack, Assistant Professor, PhD, University of Houston, 2007. Optical aberrations of the eye, custom and pseudo-custom correction of optical aberration in the highly aberrated eye, visual performance, image quality metrics predictive of visual performance.

Lisa Ostrin, Assistant Professor, OD, 2005, PhD, 2006, University of Houston. Structural and functional changes in myopia, role of color and light in eye growth, retinal physiology and imaging, glaucoma.

Deborah Otteson; Associate Professor; PhD, University of Michigan, 2000. Transcriptional regulation of retina-specific gene expression; cell biology of retinal development and regeneration.

Nimesh Patel, Assistant Professor, OD, Southern College of Optometry, PhD, University of Houston. Optical Coherence Tomography imaging in glaucoma. Neural and non-neural contributions to the retinal nerve fiber layer. The relationship of structural measures with glaucoma progression.

Judith Perrigin, Professor, OD, University of Houston, 1978. Clinical trials of contact lenses, medical laboratory testing, ocular microbiology, and management of myopia.

Jason Porter, Associate Professor; PhD, University of Rochester, 2004. Adaptive optics, scanning laser ophthalmoscopy, high-resolution retinal imaging, retinal disease, optics of the eye, ophthalmic optics.

Rachel R. Redfern, Assistant Professor, OD, PhD, University of Houston. Dry eye, experimental dry eye mouse models, ocular surface inflammation and risk for infection, and autoimmunity.

Earl Smith III, Professor; OD, University of Houston, 1972, PhD, University of Houston, 1978. Myopia, amblyopia, binocular vision, effects of visual experience on visual system development.

Scott Stevenson, Associate Professor; PhD, Brown University, 1987. Vergence eye movements and binocular coordination, stereoscopic depth perception, modeling of binocular image matching processes.

Janice Wensveen, Clinical Professor; OD, University of Waterloo, 1983, PhD, University of Houston, 1998. Stereopsis with normal and abnormal binocular visual development. Clinical accommodative and vergence anomalies.

General Information On Houston

Housing and Apartments

The University of Houston offers three basic housing options for graduate students. Students seeking to live on campus should be aware of immunization requirements.

Immunization is required for living in On-Campus housing, effective January 1, 2010. As a new incoming student to The University of Houston it is important that you be aware that the Texas Jaime Schambaum Act was passed during the 2009 Texas legislative session and recently signed into law. The new law, which is effective January 1, 2010, requires all first-time students and transfer students attending an institution of higher education in the state of Texas who plan to reside in an on-campus housing facility show evidence of having received the Bacterial Meningitis Vaccination or documentation of a valid exemption.

You must have received the vaccination at least ten (10) days prior to taking up residence in an on-campus housing facility. Students who have been approved to reside in an on-campus housing facility, but who have not received a vaccination in a timely manner will be expected to make alternate arrangements for housing until the full 10 days have elapsed. The law also allows for exemptions on medical grounds or reasons of conscience, including religious belief.

Cougar Place is designed for graduate and professional students seeking apartment-style living that offers the convenience of residing on campus at an affordable price (see Housing Brochure for updated prices). The 400-unit complex contains two-room suites with individual patios. Each unit is fully furnished with bed, desk and chair, bookshelves, drawers, closet, and built-in cabinet. For more information, call (713) 743-6045 or visit: www.housing.uh.edu/cougarplace.html

Cambridge Oaks is reserved for married, graduate, and upper-level students. Features include fully equipped kitchens, walk-in closets, separate dining areas, convenient parking, recreation areas, laundry facilities, and enclosed grounds. Residents can choose from a variety of floor plans, including efficiency, one, two, and three bedroom residences for private or shared occupancy. For more information, call (713) 743-6000 or 1-800-247-7184, or visit: www.campushousing.com/uh/html/index.php.

Calhoun Lofts is the University of Houstons' newest residential facility offering exclusive loft-style living for graduate and professional students (singles or married). Offers evening programs (cooking quick and healthy, yoga, investing, social mixers, conversational language), computer lab, study lounges, sky lounge, coffee bar, private courtyard, surround sound theatre room, special event spaces + kitchens, laundry facilities, gated parking, roof terraces, and a retail center on the first floor. Features include fully equipped luxury kitchens and furnished lofts option. Residents can choose from a variety of floor plans, including efficiency, one, and two

bedroom residences. Utilities, phone, cable, and wireless internet are included in price. For more information call (832) 842-5638 (LOFT), or visit: www.housing.uh.edu/calhounlofts/index.html

Off campus, Houston offers a varied choice of housing for all budgets and tastes. Apartments go from efficiencies to plush two story townhouses with all the amenities. Your best bet is to contact one of the many apartment locators in the area and tell them exactly what you want. Don't be shy because they have all types available. The service is free and they will help you until you find exactly what you want. Also, be sure to check the bulletin boards in the student lounge and various places around campus for advertisements. Many people advertise for roommates or places for rent.

Access Apt. Locators
(713) 780-1140

All Texas Apt. Locators
(713) 790-0220

FindIt

(713) 266-1460 or (800) 259-8558

Ace Locators
(281) 556-1421

Apartment Finders
(713) 528-5309

Apartment Connection
(713) 961-9066

Apartment guides are also available at local grocery stores free of charge.

Texas Laws

New residents who drive in the state of Texas are required to obtain a Texas Drivers License within 30 days. Car registration and a change of title are required also. Collision and liability insurance are required by the State. You must show proof of liability insurance in order to get a driver's license or to register your automobile. Call the Texas Department of Public Safety for more information.

Bookstore

The University Bookstore is located in the University Center, on the main campus across Calhoun Street from the Optometry Building. The bookstore handles all books and supplies a student will need along with a vast supply of souvenir type items and various other paraphernalia. The bookstore operating hours are M-Th, 7:45 A.M. to 6:30 P.M.; Fri, 8:00 A.M. to 5:00 P.M.; Sat. 9:00 A.M. to 3:00 P.M.; closed Sunday. (713) 748-0923

University Center

The University Center is a conglomerate of various businesses, organizations, lecture and meeting halls, etc. that provides the student with necessary entertainment and various other functions. Some of the businesses in the UC are a post office, bookstore, video rental store, pub, bowling lanes, pool tables, barber shop, gift shop, cafeteria, computer store (where student priced software may be obtained), snack bar, etc. The hours of each operation vary.

Welcome Center & Parking Garages

Located across the street from the College of Optometry, at the corner of Calhoun Road and University Drive, the University Welcome Center & covered Parking Garage house the University of Houston Freshman Admissions, Registrar, Scholarship & Financial Aid, Bursar, Transfer Center, the CougarOne Card Office and Parking & Transportation Services. Some retail businesses at the Welcome Center include: McAlister's, Tealicious Shop, and a copy and postal center.

Campus Recreation and Wellness Center

To enhance the quality of life and learning for UH students, the Campus Recreation and Wellness Center serve through recreational/ fitness programs, services and facilities in support of the mission and values of the University of Houston. The Rec Center is located across the street from the UHCO patient parking lot. Facilities include: 5 basketball / volleyball courts, 4 badminton courts, 6 racquetball courts, 2 International squash courts, social area, multi-purpose rooms, multi-activity court, indoor track, fitness area, locker rooms, a Natatorium, outdoor leisure pool, rock climbing wall, wellness Suite, assessment area, drop-in childcare, computer resource room, combat/martial arts room, dry sauna, hot tub, Smoothie King shop, and convenience store. The Rec center offers an intramural sports program, group exercise, fitness, and dance classes, and personal training. Specialty programs are provided from time to time (e.g., SCUBA, etc.). Membership is included with tuition to UH. (713) 743- 9503

University Center Satellite

Located on the northwest side of campus, near the liberal arts colleges, the UC Satellite offers services similar to those at the University Center on a smaller scale. Facilities include food vendors including Pizza Hut, Taco Bell, and Starbuck's, as well as two multi- purpose rooms and patio. Operating hours are M-Th 7:00 AM- 8:00 PM, F 7:00 AM- 5:00 PM, Sat and Sun closed. Games Room Hours: M – Th 9:00am - 8:00pm F 9:00am - 4:00pm, Sat and Sun losed. (713) 743-5297

Utilities

Electric:	Amigo Energy 2650 Fountain View Dr # 416 Houston, TX 77057, amigoenergy.com	(832) 242-7168
	Cirro Energy 11500 Northwest Fwy # 555 Houston, TX 77092, cirroenergy.com	(713) 363-8100
	Direct Energy 12 Greenway Plaza, Suite 600 Houston, Texas 77046, directenergy.com	1-888-305-3828
	First Choice Power 1631 Gill Rd Dickinson, TX 77539, firstchoicepower.com	(281) 534-3818
	Gexa Energy 20 Greenway Plz # 600 Houston, TX 77046, gexaenergy.com	(713) 470-0400

	Green Mountain Energy 2050 North Loop W # 201 Houston, TX 77018, greenmountainenergy.com	(713) 871-1297
	Reliant Energy 611 Walker Street, Houston, reliant.com	(713) 207-7777
	Spark Energy 1235 North Loop W, Houston, sparkenergy.com	(888) 772-7566 (SPARKON) (713) 977-5611
	StarTex Power 3200 Southwest Freeway, Houston, TX 77027, startexpower.com	(713) 357-2803
Gas:	Center Point Energy 777 Clay Street, Houston, centerpointenergy.com	new service (800) 752-8036 (713) 659-2111 emergency (713) 659-3552
Telephone:	AT&T Telephone, att.com	(713) 751-1874
Water:	City of Houston 4200 Leeland Street, Houston, www.publicworks.houstontx.gov/resource/ucs/info.htm	(713)224-2500

Freeway Identification

Before you try to find your way around Houston, it is necessary for you to know the common names of Houston's freeway system.

Freeway	Direction From Downtown	Common Name
Loop 610	Around it	The Loop
I-45/US 75	N / S	North / Gulf Freeway
US 59	N / S	Eastex / Southwest Freeway
I-10	W / E	Katy / Beaumont Freeway
Hwy 288	S	South Freeway
Hwy 290	NW	Northwest Freeway
Hwy 225	E	LaPorte Fwy

Directions can be obtained using Mapquest online, or internet search engines such as mapquest.com, maps.yahoo.com, or maps.google.com.

Climate

The Gulf of Mexico makes the weather semi-tropical; in other words, humid. Warm weather prevails year round except for a brief winter. Average temperatures are as follows:

	^{o}F	^{o}C		^{o}F	^{o}C
Jan	45.7^{o}	7.61^{o}	**July**	81.6^{o}	27.6^{o}
Feb.	49.6^{o}	9.77^{o}	**Aug.**	84.2^{o}	29.0^{o}
March	64.7^{o}	18.2^{o}	**Sept.**	79.8^{o}	26.6^{o}
April	70.0^{o}	21.1^{o}	**Oct.**	72.5^{o}	22.5^{o}
May	75.6^{o}	24.2^{o}	**Nov.**	67.0^{o}	19.4^{o}
June	81.0^{o}	27.2^{o}	**Dec.**	51.0^{o}	10.6^{o}

Hurricanes usually occur in the summer.

Convenience Telephone Numbers

Weather	878-8000 ext. 6345 Or (713)-529-4444 www.weather.com or www.uh.edu/weather/
Police (non- emergency)	713-222-3131
Road Conditions	878-8000 ext. 7623 or http://traffic.houstontranstar.org
Sports Highlights	878-8000 ext.
University of Houston Main	(713)-743-1000 or Ext 3-1000 or www.uh.edu
Yellow/White Pages (find a contact)	411 (special charges apply) or www.411.com

Emergency Telephone Numbers

Hermann Hospital	(713) 704-4000
Ben Taub General Hospital	(713) 793-2000
Methodist Hospital	(713) 790-3311
St. Luke's Episcopal Hospital	(713) 785-8537
Fire Department	911 or (713) 222-7643
City Ambulance Dispatcher	911
Houston Police Dept., Emergency	911
Houston Police Dispatch	(713) 222-3131
U of H Police - Emergency	(713) 743-3333 or Ext. 3-3333 or www.uh.edu/emergency
UH ON Call	(713) 743-2255 or Ext 3-2255
Passport Offices	(713) 653-3153
Poison Control Center	(713) 654-1701

Campus closing information may be found in local media outlets, particularly KUHF-FM 88.7 FM

Communications

Newspapers

- Houston Chronicle
- The Greensheet (useful for apartment hunting, buying second-hand furniture, and things to do around town)
- Houston Press (useful for local entertainment)
- Daily Cougar (the school newspaper is published daily and is useful for apartment/roommate hunting and seeing what is happening on campus)

Radio Stations

Easy Listening:
KHJZ FM 95.7 (Smooth Jazz)
KODA FM 99.1 (adult contemporary)
KHPT FM 106.9 (80's)

Country:
KTHT 97.1
KILT FM 100.3
KKBQ FM 92.9

Rock:
KRBE FM 104.1 (top 40)
KKHT FM 96.5 (adult rock)
KTBZ FM 94.5 (alternative rock)
KRTX FM 100.7 (top 40)
HOT FM 95.7 (top 40)

Oldies/Classic Rock:
KLDE FM 94.5
KKRW FM 93.7 (rock oldies)
KTJM FM 98.5 (rhythmic oldies)

Hip-Hop:
KBXX FM 97.9 (urban contemporary)
KMJQ FM 102.1 (urban contemporary)

***Classical*:**
KUHF FM 88.7 (classical)
KRTS FM 92.1 (classical)

Shopping

Despite their poverty-stricken status, graduate students still find money to shop at some of the following centers (in alphabetical order).

- Almeda Mall
- Baybrook Mall
- Deerbrook Mall
- Downtown
- First Colony Mall (Sugarland)
- Greenspoint Mall
- Gulfgate Center
- Katy Mills Mall

- Memorial City Mall
- Meyerland Plaza
- Northline Commons
- Northwest Mall
- Rice Village
- The Galleria
- Town & Country Village
- West Oaks Mall
- Westwood Shopping Center
- Willowbrook Mall
- Woodlands Mall

If you're not out on a major shopping spree, the following discount department stores are closest to the school:

- Target
- Walmart

For a change of pace, try the Common Market flea market and antique barn. Every weekend, from dawn to dusk, dealers offer everything from second-hand jeans to plants to antique furniture and jewelry. Southwest Freeway at the Westpark Exit.

From Here to Infinity: Transportation

The most convenient mode of transportation in Houston is your own car. However, a few alternatives do exist which deserve mention.

"Super Shuttle" provides shuttles to and from any Houston airport by strategically routing passengers traveling to the same geographic area. Reservations are not required from the airport, but are strongly encouraged. Transportation from the Optometry Building to Houston Bush Intercontinental Airport is approximately $30. Call 1- 800-258-3826 (BLUE VAN) or (713) 523- 8888 or visit: www.supershuttle.com .

"Houston Transit System" is the city-wide bus service. They also provide a mini-bus service from downtown to the University of Houston campus. For bus information, call 713-635-4000 (METRO) or visit: www.ridemetro.org.

"Houston METRORail" is Houston's light rail line that runs from Downtown to south of Reliant Park. It's a fast, convenient and safe way to travel between Downtown, Midtown, the Museum District, the Texas Medical Center, Reliant Park and the South Fannin Park & Ride lot. The school is not yet on the MetroRail, but many

students who live near Reliant Park can take advantage of the MetroRail to easily get to Downtown or the Museum District without having to worry about parking. For light rail information, call 713-635-4000 or visit: www.ridemetro.org.

Cab service is available through several companies, but it is quite expensive. "Yellow Cab" provides a share-a-taxi service to the airport; phone: (713) 236-1111 or www.yellowcabhouston.com. Another is Lone Star Taxi Co.; phone (713) 444-4444.

The most economical alternative is car-pooling, which is common practice with Optometry students who live in the same area of the city. This allows a sharing of expenses which is advantageous to the participants. It also allows you to drive in the HOV-lane and avoid some of the traffic. Check with 2nd, 3rd and 4th year students for car pools for trips back to your respective hometowns too, such as during holidays or spring break.

Good luck in learning your way around Houston! With a little prior orientation, map in hand, and patience, you will be able to find the location of your choice.

Attractions

Antique Car Museum

A variety of classic cars, from Duesenbergs to Cadillacs, are exhibited at this museum. Open Tues.-Fri 10-6, Sat 9:30-7:30, Sun 11-6 San Felipe St. (713) 868-2243

Armand Bayou Nature Center

This 2,500-acre wilderness preserve includes several rare ecological systems representative of the Texas gulf coast. Also included are an environmental education center, an interpretive building and early 20th-century farm buildings. Public demonstrations and tours are offered on weekends. Open Wed 9-dusk, Thurs.-Fri 9-5, Sat dawn-5 and Sun 12-dusk. 8500 Bay Area Boulevard, off I-45S. (713) 474-2551 www.abnc.org

Battleship Texas

The only surviving combat ship to have served in both World Wars, the Texas has undergone extensive restoration. She is berthed at San Jacinto Battleground State Park. 3527 Battleground Road, La Porte. www.tpwd.state.tx.us/ park/battlesh/

Bayou Bend Mansion & Gardens

One of the nation's premier decorative arts collections is housed in this former estate of the late Houston philanthropist Miss Ima Hogg. The collection consists of more than 4,700 works from the Colonial period to the early-19th century, including furniture, paintings, metals, glass, ceramics and textiles. The collection is part of The Museum of Fine Arts, Houston. Surrounding the Mansion are 14 acres of formal and woodland gardens bounded on three sides by Buffalo Bayou. Cared for by the River Oaks Garden Club, the gardens are open for self-guided tours and guided tours, which can be arranged by the tour secretary. Open Tues.-Sat 10-4:30, Sun 1-4:30. 1 Westcott Street. www.mfah.org

Blaffer Gallery.

The art museum of the University of Houston. Features changing exhibits of contemporary arts. Open Tues- Fri 10-5, Sat-Sun 1-5. Closed holidays. Free entrance. Off of I45 S. and Cullen Blvd. Campus entrance 16. (713) 743-9530. http://www.class.uh.edu/blaffer/

Byzantine Fresco Chapel Museum

Chapel built to house the only intact Byzantine frescos in the Western hemisphere. In the 1980's, the 13th century dome and apse were stolen from a chapel in Cypress and were rescued and restored by the Menil collection. Allow 1 hr. minimum. Open Fri-Sun 11-6. 4011 Yupon. (713) 521-3900.
www.menil.org/byzantine.html

The Children's Museum of Houston

Hands-on participation and interaction with a wide variety of intriguing exhibits and educational activities encourage the inventor in every child. Nine galleries are located in the 12,000-square-foot exhibit hall. The museum's courtyard houses one of the largest maps of the earth; the Greenhouse and Babbling Bayou; Tot Spot Castle; Victorian Playhouse; and Pirate's Ship. Open Tues.-Sat 9-6 and Sun 12-6. 1500 Binz. www.cmhouston.org

Clear Lake Queen

This 12-year-old paddle wheeler offers a 90-minute cruise every Sat and Sun and a special dinner and entertainment cruise on Fri and Sat evenings. Reservations are required for dinner. NASA Road One at Clear Lake Park. www.paddlewheel.com

Contemporary Arts Museum

The largest museum in the Southwest, the collection includes sculpture, paintings, photography and videos. Programming includes changing exhibits, lectures and educational offerings. Open Tues-Fri 10-5, Sat and Sun 12-5. 5216 Montrose Boulevard at Bissonnet St. www.camh.org

Discovery Green Park

A 12-acre park in proximity to the George R. Brown Convention Center, Minute Maid Park and Toyota Center. Opened on April 13, 2008. Features a one-acre lake (functions as an outdoor ice skating rink in the winter), children's playground, interactive water features, amphitheater stage and slope with special shows and events, dog runs for large and small breeds, public art works, HPL Express, spacious green lawns, a farmer's market each Thursday, great restaurants, The Grove and The Lake House. For more information call 713-400-7336 or visit www.discoverygreen.com.

Downtown Aquarium

The Downtown Aquarium, near the Theater District, mixes family fun, fine dining, spectacular sea creatures and gorgeous views of the city. The 500,000-gallon underwater adventure complex includes a Ferris wheel, Aquatic Carousel and Shark Voyage, a passenger train that tunnels through the exhibit. Drink and dine at the Aquarium Restaurant, the Marina Matinee Café and the Dive Lounge. Admission is $7.50, with discounts for kids and seniors, and rides up to $4.50 per person. Valet parking is available for $8, and on-site parking $3 per hour. 410 Bagby St. at Memorial Drive. For details, call (713) 223-FISH (3474) or visit www.downtownaquarium.com .

Fort Bend Museum

History of Fort Bend county from the original 300 families. Includes historic home of John M.Moore and the Long-Smith cottage. Open Tues-Fri 9-5, Sat 10-5, Sun 1-5. 500 Houston Street Richmond, TX. (281) 342-6478. www.fortbendmuseum.org

Gulf Greyhound Park

The world's largest greyhound racing operation features four levels for viewing, 318 teller windows, over 700 closed-circuit televisions and parking for 8,000 vehicles. Year-round racing is held Tues-Sun evenings. Doors open at 6, racing begins at 7:30 p.m. Off I-45 South at Exit 15, La Marque. 1-800-275-2946/409-986-9500. www.gulfgreyhound.com

Galveston County Historical Museum

Explores Galveston history and heritage, from the Native Americans to the 1900 storm and the Texas City disaster. Open Mon-Sat 10-4, Sun 12-4. Free admission. (409) 766-2340. www.galvestonhistory.org/1921_Galveston_County_Historical_Museum.asp

Galveston Historic Homes Tour

Featuring the Ashton villa, a Victorian family home; the Menard House, an 1838 home built by the founder of Galveston with Greek influence; Williams House, an 1839 home of Stephen F. Austin's secretary and founder of the Texas navy. Prices and hours subject to change. Located in Galveston, TX. (409) 762-3933. During the first and second weekend of May, private homeowners open their door to guests during Historic Homes Tour. (409) 765-7834. www.galvestonhistory.org

George Ranch Historical Park

500 acre living history site with a working ranch. Trams take visitors to see areas representing Texas history- an 1830's farm, an 1890 Victorian mansion, cowboy camp, blacksmith shop, family cemetery, and a 1930's ranch and cattle working area. Open daily 9-5. Located at 10215 FM 762 @ Richmond, TX. (281) 343-0218. www.georgeranch.org

Heritage Society

Seven historic structures and a small museum of Texas history are located here in 19-acre Sam Houston Park. Each building is decorated with period furnishings. Tours are offered through the landscaped grounds and gardens, as well as the buildings, Mon.-Sat 10:00-3:00 and Sun 1:00-4:00. 1100 Bagby Street. www.heritagesociety.org

Hermann Park

445 acre park with zoo and museum, miniature golf, and picnic facilities. Japanese garden features a tea house waterfall and reflecting pond. Open daily 6 – 11 PM, Japanese Garden Apr- Sept :10-6, Rest of the year: 10-5. North McGregor Way at 6001 Fannin. (713) 845-1000, for concert information: (713) 284-8350. www.hermannpark.org

Holocaust Museum

Historical view of the Holocaust with photographs, videotapes, and labled artifacts. Open Mon- Fri 9-5, Sat-Sun- 12-5, closed Jewish holidays, Thanksgiving, and Christmas. S on SR 288 to Southmore/ Calumet St., 8 miles west on Calumet to 5401 Caroline St. (713) 942-8000. www.hmh.org

Houston Arboretum & Nature Center

Founded 25 years ago, this 155-acre urban sanctuary offers five miles of trails, nature education programs for children, a free Urban Nature Series and guided tours. The Discovery Room offers seasonal hands-on exhibits, turtles, fish and a Nature Store. Trails open daily 8:30-6; tours are Sun at 2 and 3 pm. 4501 Woodway Drive. www.houstonarboretum.org

Houston Center for Photography

The focus for contemporary and historical photography in the South and Southwest. Exhibitions, education programs, workshops and lectures are featured. Open Wed-Fri 11-5, Sat and Sun 12-5. 1441 W. Alabama St. www.hcponline.org

Houston Fire Museum

Located in the former Station No. 7, the museum is designed for firefighters and fire fighting enthusiasts. Visitors see the evolution of the profession from the bucket brigade of 150 years ago to the services provided by today's Houston Fire Department. Open Tues-Sat 10-4. 2403 Milam at McIlhenny. www.houstonfiremuseum.org

Houston Museum of Natural Science

Founded in 1909, the museum is a three-part, 162,000-square-foot complex which houses the Burke Baker Planetarium, Wortham IMAX Theater and a natural science museum. The Museum has a butterfly/tropical rain forest center and an oil and gas technology exhibit. Open Mon.-Sat 9-6, Sun 12-6. Call for IMAX show times. 1 Hermann Circle Drive. (Museum)/639-IMAX (Planetarium). www.hmns.org

Houston Zoo

More than 2,000 animal species can be found at this 50-acre complex. Special features include the Small Mammal World, the five-acre Wortham World of Primates, the Children's Zoo and the George R. Brown Education Center. Open daily 10-6. 1513 McGregor Drive. www.houstonzoo.org

KEMAH Boardwalk

Boardwalk features games, train ride, amusement park, shopping, concerts, fireworks, the Kemah aquarium and outdoor playground. Located at Bradford Avenue and 2nd Street Kemah, TX. 1-877-AT-KEMAH or www.kemahboardwalk.com

McGovern Museum of Health and Medical Science

An interactive health museum featuring a giant brain, amazing body pavilion, and 3D anatomy models. Open Mon-Sat 9-5, Sun 12-5, closed on Thanksgiving and Christmas. Thursday night family fun night free admission between 5-8pm. 1515 Hermann Drive. (713) 521-1515. www.mhms.org

Memorial Park

Park includes facilities for jogging, tennis, volleyball, hiking, biking, picnicking, and wildlife- and people-watching are all readily available, and one of the city's premiere golf courses is in Memorial Park. Memorial Park Picnic Loop gives riders a smooth surface for their daily ride. This multi-use trail is open for use by road bikers, in-line skaters, traditional roller skate enthusiasts, and hikers during regular park hours. Mountain bikers will find some of the best trails in the area for off-road biking at Memorial Park. Numerous ravines and slopes along Buffalo Bayou relieve Houston's relentless flatness and provide the adventurous with challenging terrain. A fitness facility and swimming pool are also located at Memorial Park. 6501 Memorial Drive, near the I-10 & I-610 West Loop intersection.

The Art Car Museum

A private institution dedicated to contemporary art. Displays local, national and international artists with emphasis on art cars and other fine arts. Open Wed-Sun 11-6. 140 Heights Blvd. Houston (713) 861 – 5526 www.artcarmuseum.com

The Menil Collection

This privately owned collection includes more than 10,000 works of art ranging from prehistoric to contemporary. Open Wed-Sun 11-7. 1515 Sul Ross Street. www.menil.org

The Miller Outdoor Theatre

A first-class proscenium theatre, professionally operated and committed to providing quality and diverse FREE performances. Tickets in the air-conditioned arena must be pre-ordered and picked up two hours before the performance. Otherwise, bring a picnic blanket and picnic chairs and watch from the grass field. Located in Herman Park. For more information call 281-FREE-FUN (281.373.3386) or visit www.milleroutdoortheatre.com.

The Museum of Fine Arts, Houston

Founded in 1900, this was the first art museum in Texas. The collection features over 27,000 works including the Straus Collection of Renaissance and 18th-Century Works, the Beck Collection of Impressionist Art, and the Glassell Collection of African Gold. Also featured are a sculpture garden, library and museum stores. Open Tues-Sat 10-5, Thurs. pm 5-9, and Sun 12:15-6. 1001 Bissonnet St. (713) 639-7300, www.mfah.org.

Moody Gardens

The Moody Gardens complex in Galveston, TX is a 45 minute drive south on I-45. The complex includes the Rainforest Pyramid with thousands of tropical plants, exotic fish and birds. Explore the mysteries of science at the Discovery Pyramid, and take a ride through the universe at the Ridefilm Theater. There is a six-story IMAX 3D Theater. Visit beautiful Palm Beach and the new Moody Gardens Hotel. Open daily; One Hope Boulevard in Galveston; (800) 582-4673 or visit www.moodygardens.com.

Museum of Printing History

Collections of printed material, equipment and art are among the features in the five galleries here. The museum also sponsors educational exhibits, interactive workshops, lectures and short-term exhibitions in the Print Gallery. Open Tues-Sat 10-5, free admission. 1324 W. Clay St. (713) 522-4652 or www.printingmuseum.org.

The Orange Show

This monumental work of hand-made architecture has evolved over the past 2 years to illustrate the philosophy of its founder, Jeff McKissack. This philosophy focuses on the benefits of good health, nutrition and the orange. Culturally diverse performances, workshops and community-oriented events are held March-Dec. Open weekdays and holidays 12-5; Memorial Day-Labor Day, open weekdays 9-1. 2401 Munger. www.orangeshow.org

National Museum of Funeral History

Traces funeral history from the times of the Egyptians till the present. Allow 30 min minimum. Open Mon-Fri 10-4, Sat- Sun 12-4. 415 Barren Springs Drive. (281) 876-3063. www.nmfh.org

Nature Discovery Center

Center houses discovery rooms with exhibits and on-hands activities, including: turtles, snakes, rabbits, and more. Playground on grounds. Free admission. 7112 Newcastle Bellaire, TX. (713) 667-6550. www.naturediscoverycenter.org

Pier 21 Theatre

Step back in time with historic documentary films. Harborside Drive at 21st Street. Galveston, TX. (409) 763-8808. www.galveston.com/pier21theatre

Port of Houston

Houston's port is considered one of the largest ports in the world, handling the greatest amount of foreign tonnage in the nation. A wonderful view of the turning basin can be seen from the observation deck at Wharf 8. The 100-foot sightseeing vessel, MV Sam Houston, takes visitors on free tours of the port and ship channel. I-10 East, Wayside to Avenue R. 670-2416 (Tour Reservations). www.portofhouston.com

San Jacinto Battleground, Monument, & Museum of History

General Sam Houston and his army defeated General Santa Anna and his Mexican troops here on April 21, 1836, winning the independence of Texas from Mexico. The 570-foot San Jacinto Monument was built to honor those Texans who fought in the battle. The San Jacinto Museum of History exhibits Texas history from the period prior to the discovery of America through the end of the 19th century. The museum also houses a library with 10,000 titles as well as 200,000 manuscripts and documents. The Jesse H. Jones Theater, located on the ground floor of the monument, shows a 35-minute multi-image presentation of the battle. Theater shows begin on the hour, 10-5. Museum is open daily 9-6. 3800 Park Road 1836, La Porte. www.sanjacinto-museum.org

Space Center Houston

Five major attractions let you experience the awe of manned space flight: Space Center Plaza, a full-scale space shuttle mock-up and the central hub of activity; The Feel of Space, computer simulators give you the chance to retrieve a satellite or land the shuttle; Space Center Theater, a five-story movie screen shows "To Be An Astronaut"; Starship Gallery, films, artifacts and exhibits; and Mission Status Center, a theater presenting live action occurring at NASA. The NASA Tram Tour takes you behind-the-scenes at the Johnson Space Center. Open Mon.-Fri 10-6, Sat and Sun 9-7. www.spacecenter.org

Texas Seaport Museum (home of the ELISSA)

Explore the ELISSA decks and watch the story of ELISSA's rescue from the scrapyard. Admission includes a guided tour. Located at Pier 21, Harborside Drive at 21st Street in Galveston, TX. (409) 763-1877. www.tsm-elissa.org

Theater District

Home to seven major performing arts companies, this downtown area offers live entertainment and theater to residents and visitors alike. Bounded by I-45, the Bayou, Walker, Preston and Milam streets. www.houstontheaterdistrict.org

Tunnel Walks

Located nearly 20 feet below the surface, the 6.3-mile tunnel system is a series of passageways linking more than 70 buildings, including hotels, banks and retail stores. The tunnels are free of charge and open Mon.-Fri 7-6. A suggested starting point is at the Park Shops. Austin Street between Lamar and McKinney streets. www.discoverhoustontours.com

Houston Sports

Reliant Park – home to Houston Texans football team, 832-667-1400, South 610 and Kirby
Toyota Center – home to the Houston Rockets basketball team, 713-758-7200, 1510 Polk St
Minute Maid Park – home to the Houston Astros baseball team, 713.259.8000, downtown

Restaurants, Etc.

The following is a list of several places in the area that you might want to try. This is by no means a complete list of restaurants, but it is a list of the places recommended by some of the students.

Restaurants

• Black Eyed Pea	U.S.	$
• Bombay Sweets	Indian vegetarian	$
• Cafe Adobe	Tex-Mex	$$
• Collinas (Rice Village)	Italian	$
• Cafe Edi	Italian	$
• Chocolate bar	Desserts	$
• Churrascos	South African	$$-$$$
• Dimassi's	Mediterranean (buffet)	$

• Fu Kim (on Fannin)	Vietnamese	$
• Fu's Garden (on Kirby)	Hunan	$$
• Fred's Italian Corner	Italian	$
• Goode & Co.	Barbecue	$
• Houston's	Continental	$-$$$
• Hunan Star (Clear Lake)	Chinese	$
• Hungrys Bistro (Rice Village)	Salads/Sandwich	$
• Indica	Indian	$$$
• Istanbul Grill (Rice Village)	Turkish	$
• Kim Son (Chinatown)	Vietnamese	$$
• La Madeleine	French Cafe	$
• Landry's	Seafood	$-$$
• Madras Pavillion	Indian vegetarian	$
• Mayuri	Indian	$-$$
• Niko Niko's	Greek	$-$$
• Ninfa's	Mexican	$-$$
• Oishii	Sushi	$
• Pappa's	Various types	$-$$
• Pappadeaux	Cajun	$-$$
• Pappasito's Cantina	Tex-Mex	$-$$
• Shiva's	Indian	$-$$
• Star Pizza (Greenbriar)	Italian	$
• Ruggles Café (Rice Village)	Sandwich/Salads	$
• Taco Cabana	Mexican	$
• Two Rows	Brewery/US	$
• Wok Bo	Chinese	$
• Yum Yum Café (Rice Village)	Dim Sum	$

$ Less than $10
$$ 10-20
$$$ >20

Acknowledgements

Thanks for updates of this handbook

Lisa Ostrin, OD, PhD (updated 2004)

Liat Gantz, PhD (updated 2006 & 2009)

Special thanks to Rachel Redfern, OD for assistance with restaurants section.