Human Computer Interaction

Interdepartmental Graduate Program

Graduate Student Handbook

Spring 2014

IOWA STATE UNIVERSITY

Welcome to the Human Computer Interaction (HCI) Interdepartmental Graduate Program at Iowa State University.

This student handbook is provided to give you general guidance about important issues related to your graduate career. Because the Human Computer Interaction Interdepartmental Graduate Program continually seeks to improve, some changes may occur between the annual printings of this handbook. You should stay in close communication with your major professor regarding important curriculum and policy issues. We also encourage you to bring questions and comments to the Chair and members of the HCI Supervisory Committee at any time.

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I. Introduction

Human Computer Interaction Interdepartmental Graduate Program

The Interdepartmental Graduate Program in Human Computer Interaction (HCI) is an interdisciplinary academic program created to foster research excellence in HCI at Iowa State University. It offers outstanding opportunities for graduate study in a wide range of disciplines. The program welcomes students from a diverse collection of technical and creative fields whose unifying characteristic is the desire to develop new ways to bridge the gap between human and machine.

The HCI program involves over 70 nationally and internationally known faculty who participate in a wide range of collaborative projects with other faculty and industry partners. These faculty members are a diverse group of highly dynamic researchers who are enthusiastic about the challenges and opportunities presented by this rapidly changing field. All of these faculty members share a common interest in the invention, application and evaluation of next generation computer interfaces.

The HCI program currently includes (but is not restricted to) interdisciplinary research within 32 academic areas of focus:

- Aerospace Engineering and Engineering Mechanics
- Agricultural and Biosystems Engineering
- Apparel, Educational Studies & Hospitality Management
- Architecture
- Art and Design
- Biomedical Sciences
- Chemistry
- Civil, Construction, and Environmental Engineering
- Computer Science
- Curriculum and Instruction
- Ecology, Evolution and Organismal Biology
- Economics
- Educational Leadership & Policy Studies
- Electrical and Computer Engineering
- English
- Genetics, Development & Cell Biology
- Geological and Atmospheric Sciences
- Gerontology
- Greenlee School of Journalism and Communication
- Human Development and Family Studies
- Industrial Design
- Industrial and Manufacturing Systems Engineering
- Kinesiology
- Logistics, Operations, and Management Information Systems
- Materials Science and Engineering
- Mathematics
- Mechanical Engineering
- Music
- Psychology

- Statistics
- Veterinary Microbiology & Preventive Medicine
- Veterinary Pathology

The program is flexible: four core courses chosen, from the areas of Design, Implementation, Evaluation and Phenomena, are required for both the MS and PhD degrees. Students in the PhD program are required to choose two more courses from either the list of core courses or from the list of recommended electives. Participation in HCI 591, the HCI Seminar is also required. The remaining graduate credits may be chosen at the discretion of the student and program of studies committee.

The expected sequence for the MS and PhD graduate programs are as follows:

MS: Four core HCI courses and HCI Seminar, plus additional courses at the direction of the program of studies committee. Average duration of the program is estimated at 2 years with a minimum of 30 credits required.

PhD: All programs of study must include four core HCI courses listed as part of the MS program, two additional core or recommended courses, HCI Seminar credits and a minimum of nine research credits. Additional courses should span both the student's primary area of specialization and HCI related courses necessary to provide additional background relevant to the student's research. Average duration of the program is estimated at 2 years beyond the MS with a minimum of 72 credits required.

Administration and Contact Information

Human Computer Interaction Interdepartmental Graduate Program activities are overseen by the Chair, Supervisory Committee, and Program Coordinator. Please contact someone from the list included under the introduction if you have any questions about the program.

II. Upon Arrival at Iowa State

To help in the orientation process, new students should:

- Read this handbook. It is especially important to read the section on *Administrative Matters* during your first few days. E-mail is the HCI program's most important means of communication, so students should register for e-mail as soon as possible. Detailed information about e-mail registration can be found at http://www.it.iastate.edu/email/ Please notify Pam Shill (Program Coordinator, pshill@iastate.edu) of your Iowa State e-mail address once you receive it.
- Obtain the following references and examine them carefully. They contain information about University regulations and requirements for graduation. Several of these documents are included with the ***HCI Graduate Student Orientation Handbook.***

  ISU Graduate Student Online Orientation
  http://www.grad-college.iastate.edu/orientation/

  Orientation Resources for International Students
  https://www.isso.iastate.edu/joomla/index.php?option=com_content&view=article&id=138&Itemid=222
  The International Students and Scholars website can be found at
  www.public.iastate.edu/~internat_info/homepage.html

  Graduate College Handbook
  http://www.grad-college.iastate.edu/common/handbook/Grad_College_Handbook_February_2014.pdf

  Electronic Thesis/Dissertations
  http://www.grad-college.iastate.edu/current/thesis/

  Iowa State Graduate College forms are available online at:
  http://www.grad-college.iastate.edu/common/forms/student_forms.php

- Other useful references include:

  ISU General Catalog
  http://catalog.iastate.edu/

  Schedule of Classes
  http://classes.iastate.edu/

https://accessplus.iastate.edu/frontdoor/login.jsp

Iowa State University's AccessPlus is a personalized, secure, university information resource that provides on-demand accessibility to your confidential information. Menu options for students include:

- Address Change
- Current Student Information
- Dining Services
- Financial Aid Information
- Grades and Transcripts
- Long Distance Code
- Course Registration
- Residence Hall Information
- Tax Information
- University Bill
- Class Schedule
- Web-based Training

Iowa State University Phone/E-mail Directory

http://info.iastate.edu/

HCI Student Group Website

https://intranet.vrac.iastate.edu/intranet/twiki/bin/view/TheLab/HciStudentGroup

This site requires your university username and password to log in. Please contact Pam Shill if you are unable to access this site.

The Iowa State University homepage is at **www.iastate.edu.**

III. Getting Started – The First Year

Graduate Student Orientation

For new graduate students, the academic year begins with a Graduate Student Orientation event designed to ease the transition to graduate study at Iowa State. This is a time to become acquainted with the Human Computer Interaction Interdepartmental Graduate Program and its members, and to prepare for registration and the start of classes. In addition to participating in the HCI orientation events, students also will take part in orientation activities offered by the Graduate College and International Education Services. Students should refer to all schedules for information about Orientation activities.

New HCI students are admitted to the program in one of two categories:

- *First year students*
  New students admitted into HCI as a major will either be assigned an academic department or will take part in a rotation through the program until the student makes a final selection of an academic department. A rotation through HCI allows the program to admit students in cases in which a decision on the academic department needs some time for consideration or the major professor is not yet known. The program requires that the academic department be assigned within one year.
- *Current ISU students admitted to HCI as "transfers," "co-majors" or "concurrent degree candidates"*
  A student admitted to HCI as a transfer from another ISU department or program, or as a co-major or concurrent degree candidate usually has the same home department as that of his/her major professor.

Registration for Classes

Registration information is sent to a student's academic department each semester. Academic departments may also conduct orientation sessions for new students, including interdepartmental majors in their department. After initial registration, adjustments to a student's schedule (e.g. course adds and drops, section changes and credit changes) can be made on 

until the end of the first week of classes. After the first week, all changes must be submitted on a *Request for Schedule Change or Restriction Waiver* form (better known as an *Add/Drop Slip)*, which also is available from the HCI program office or from academic department advisors.

Establishing a Home Department

For administrative purposes, the major professor's department is generally the student's home department. If a student is admitted through an HCI rotation, the student must initiate a *Request to Establish a Home Department for Students Admitted to Interdepartmental Majors* form http://www.grad-college.iastate.edu/forms/files/EstablishDepartment.doc.
and submit it to the HCI administrative office. All HCI students should have filed their Home Department forms within one year after starting the program.

On the Home Department form, in Section II, after "Comments," the major professor must note his or her agreement to accept the student and to arrange or provide funding. The major professor should then sign the "Major Professor" line. Academic departments will, in most cases, review this application based on existing departmental standards before approving.

Appointing a Program of Study (POS) Committee

After choosing the major professor and establishing a home department, students should work with him/her to begin planning a suitable program for completion of the HCI graduate coursework. Before the end of the first year, students, in coordination with their major professor, should appoint a graduate Program of Study (POS) Committee by filing a *Recommendation for Committee Appointment* form http://www.grad-college.iastate.edu/common/forms/form.php?id=8&type=2
The composition and responsibilities of the POS committee must be in accordance with the Graduate College guidelines (see below).

The POS committee should include faculty whose expertise will ensure a breadth of knowledge on the committee and whose knowledge and research interests can aid and complement the student's research interests.

For PhD candidates, the POS committee must consist of at least five members of the Graduate College Faculty. The committee must have at least three faculty members—including the major professor and any co-major professor—from within the Human Computer Interaction major (i.e., who are members of the HCI faculty). One member of the committee must be either outside the major (not an HCI faculty member) or outside the student's home department.

For MS candidates, the POS committee must consist of at least three members of the Graduate College Faculty. Major and co-major professors must be members of the HCI faculty. One member of the committee must be either outside the major (not an HCI faculty member) or outside the student's home department.

For Online MS candidates, the major professor is Stephen Gilbert. One additional hci faculty member is needed on the committee.

For Certificate candidates, the POS committee is not applicable. The major professor for certificate students is Jim Oliver.

For Concurrent Master's Degrees, a student must file separate *Recommendation of Committee Appointment* and *Program of Study* forms for each degree. Two awarded master's degrees require at least 22 hours of non-overlapping credit in each major and two terminal projects (theses or creative components). These two degrees do not have to be awarded during the same term, since requirements for each are completed separately. For more information, see page 28 of the *Graduate College Handbook.*

IV. Academic Matters

Degrees Offered

The Human Computer Interaction Interdepartmental Graduate Program offers a PhD degree, an MS degree, an Online MS degree, and a Graduate Certificate. The MS degree is not a prerequisite for the PhD program.

Students who are admitted to the MS program and who wish to transfer to the PhD program in HCI may request to do so. Approval is required from the major professor supporting the student's MS program.

Required Courses

A. PhD Requirements:

Iowa State University requires a minimum of 72 graduate credits to earn a PhD. At least 36 graduate credits, including all dissertation research, must be earned at ISU. The 36 credits earned at Iowa State must include the six required courses, the HCI Seminar, and Research Credits listed below. Up to 36 credits from a student's master's degree can be applied to the POS. Of the 72 credits ISU requires for a PhD, 31 credits (listed below) are programmatic requirements for HCI.

- **Core courses required (18 credits):**

  CORE COURSES: (choose one course from each category below):

  <u>Design</u>
  - HCI 521Cognitive Psychology of HCI
  - ArtGR 672B Graphic Design and Human Interaction: Design for Social Inclusion

  <u>Implementation</u>
  - HCI 575 Computational Perception
  - HCI 574 Computational Implementation and Prototyping
  - HCI 573X User Interface Implementation for Web Applications
  - CprE/ME 557 Computer Graphics and Geometric Modeling

  <u>Phenomena</u>
  - JLMC / TSC 574 Communication Technology and Social Change
  - HCI 589X Design and Ethics

Evaluation

- ENGL/STAT 332 Visual Communication of Quantitative Information
- PSYCH 501X Foundations of Behavioral Research
- STAT 480 Statistical Computing Applications
- HCI 504 Managing and Evaluating Instructional Technology Programs
- HCI 522 Scientific Methods in HCI

In addition to the four core courses, students are required to choose two additional courses, either from the list of core courses above or from the list of recommended electives below.

RECOMMENDED ELECTIVES:

- ArtIS 508 Computer Aided Visualization *(Implementation)*
- CI 503 Theories of Designing Effective Learning and Teaching Environments *(Design)*
- CI 511 Technology Diffusion Leadership and Change *(Phenomena)*
- HCI 520 Computational Analysis of English *(Implementation)*
- HCI 522 Scientific Methods in HCI *(Evaluation)*
- HCI 558 Introduction to the 3D Visualization of Scientific Data *(Implementation)*
- HCI 580X Virtual Worlds and Applications *(Implementation)*
- HCI 585X Developmental Robotics *(Implementation)*
- HCI 587X Models and Theories in Human Computer Interaction
- HCI 594 Organizational Applications of Collaborative Technologies and Social Media
- HCI 595 Visual Design for HCI *(Design)*
- HCI 596 Emerging Practices in HCI *(Evaluation)*
- HCI 603 Advanced Systems Design *(Implementation)*
- HCI 681X Cognitive Engineering
- IE 577 Human Factors
- ME/FLNG 584 Technology, Globalization and Culture *(Phenomena)*
- STAT 401 Statistical Methods for Research Workers *(Evaluation)*

- **HCI 591 Seminar (4 credits minimum):**
  - PhD students are required to take HCI 591 Seminar in HCI for four semesters.

- **Research (9 credits minimum):**
  - Minimum of 9 total research credits which must be completed under the supervision of the POS committee.

Additional courses may be added at the direction of the Program of Studies Committee. A 3.0 GPA or better is required.

B. MS Requirements:

In order to earn an MS at Iowa State University, each student's POS must include at least 30 graduate credits—but no more than 36 credits. Master's students should avoid putting more than the required number of credits on their POS to avoid problems with this rule. At least 22 of the graduate credits must be earned at ISU. Within these credits the following 17 credits are required.

- **Core courses required (12 credits):**

  CORE COURSES: (choose one course from each category below):

  Design
  - HCI 521Cognitive Psychology of HCI
  - ArtGR 672B Graphic Design and Human Interaction: Design for Social Inclusion

  Implementation
  - HCI 575 Computational Perception
  - HCI 574 Computational Implementation and Prototyping
  - HCI 573X User Interface Implementation for Web Applications
  - CprE/ME 557 Computer Graphics and Geometric Modeling

  Phenomena
  - JLMC / TSC 574 Communication Technology and Social Change
  - HCI 589X Design and Ethics

  Evaluation
  - ENGL/STAT 332 Visual Communication of Quantitative Information
  - PSYCH 501X Foundations of Behavioral Research
  - STAT 480 Statistical Computing Applications
  - HCI 504 Managing and Evaluating Instructional Technology Programs
  - HCI 522 Scientific Methods in HCI

- **HCI 591 Seminar (2 credits minimum):**
  - MS students are required to take HCI 591 Seminar in HCI for two semesters.

- **Research (3 credits minimum):**
  - Thesis HCI 699 with final oral examination. These credits can be taken in more than one semester.

Additional courses may be added at the direction of the Program of Studies Committee. A 3.0 GPA or better is required. Several sample curricula for the Master's program, as well as a list of example courses that the Program of Studies Committees might choose from to meet the research methods requirement for the MS degree, are shown on the *Sample Curricula* page under Appendix B.

C. Online MS Requirements:

The Online MS program is designed for students who are not able to attend classes on campus. It is a non-thesis program, meaning that after a student completes their course work, they will take a Capstone course in place of writing a thesis. A total of 30 credits is required. A 3.0 GPA or better is required.

- **Core Courses required (9 credits) (3.0 GPA or better is required)**
  Choose one course from each of the categories below:

Design
- HCI 521Cognitive Psychology of HCI

Implementation
- HCI 575 Computational Perception
- HCI 574 Computational Implementation and Prototyping
- HCI 573X User Interface Implementation for Web Applications
- CprE/ME 557 Computer Graphics and Geometric Modeling

Phenomena
- JLMC / TSC 574 Communication Technology and Social Change
- HCI 589X Design and Ethics

Capstone Project
- HCI 598 HCI Design, Implementation and Implications

Additional courses may be added at the direction of the Program of Studies Committee. A 3.0 GPA or better is required.

D. Graduate Certificate Requirements:

To earn an HCI Graduate Certificate, 12 course credits must be taken. These include three required courses and one elective of the student's choice. A 3.0 GPA or better is required.

- **Core Courses required (9 credits) (3.0 GPA or better is required)**
  Choose one course from each of the categories below:

Design
- HCI 521Cognitive Psychology of HCI

Implementation
- HCI 575 Computational Perception
- HCI 574 Computational Implementation and Prototyping
- HCI 573X User Interface Implementation for Web Applications
- CprE/ME 557 Computer Graphics and Geometric Modeling

Phenomena

- JLMC / TSC 574 Communication Technology and Social Change
- HCI 589X Design and Ethics

- **One course elective (3 credits)**

Please see appendix C.

Objectives of the Major

The objectives of the HCI major are:

- To provide broad and robust graduate student education in Human Computer Interaction.
- To enhance the national and international reputation of Iowa State University in the field of Human Computer Interaction.
- To foster further intellectual exchange and research collaborations among Iowa State faculty, students and staff involved in the study of Human Computer Interaction
- To provide a formal entity for seeking broad-based resources for the support of lecture series, retreats, graduate assistantships, postdoctoral fellowships and various graduate student prizes for excellence in Human Computer Interaction Research.

Learning Outcomes

Every PhD and MS student on campus will develop an electronic portfolio (E-portfolio) during the course of their program and present a final copy on CD to the major professor and HCI program office prior to graduation. The E-portfolio will include information on each of the eight objectives listed below.

Table 1. Measures used in outcomes assessment of education objectives.

Objective No.	Description	Outcomes Assessment
1	Ability to articulate societal and ethical issues	Success in the core course in this area (MIS 655) will require a paper and a presentation focusing on ethical issues in the student's area of core competence.
2	Understanding of emerging interactive technologies	Successful completion of course work and integrating classroom knowledge into research (thesis work).
3	Ability to enable HCI in core discipline	POS committee through thesis defense.
4	Ability to work in teams	All students are required to work on team projects in the three

		core courses and to participate in HCI exercises as members of multidisciplinary teams. Successful mastery of teamwork skills will be evaluated by course- and project-faculty using a rubric prepared for this purpose.
5	Ability to design a research project, formulate a proposal, and publish the results of the research	MS has thesis option only. PhD candidates will be required to submit a formal research proposal to their POS committee. MS and PhD students will be encouraged to strive toward publication of their work in an appropriate journal. A committee of project faculty will annually review the theses and dissertations completed during the year, gathering information about how well the learning outcomes of the HCI program have been achieved and identifying areas for continuous improvement of the curriculum.
6	Ability to work in more than one disciplinary area	All HCI students will be combining core disciplinary skills with HCI application skills. Students will participate in classroom and research activities in which they will be responsible for the integration of HCI concepts and technologies into their core discipline. Student performance in this arena will be evaluated by the POS committee.
7	Ability to present work orally and in writing	All HCI degrees will be based, in part, on satisfactory writing of a thesis and performance on an oral exam.
8	Ability to apply HCI skill to serve the community.	All students are required to make a contribution to the community by volunteering time, effort, and skills. This will benefit the student's competitiveness in the job market. Appropriate service will require the application of HCI theory,, principles and methods. Service must be approved in advance by the POS committee as qualifying. Some examples of appropriate service include, but are not limited to: website design for a non-profit organization, consultation with government, industry, or academia on HCI related issues, education of the public on HCI related topics, open source contributions, mentoring of junior HCI students, or assuming leadership roles in HCI organizations. Elective courses with service projects may meet these requirements, but projects for the required HCI courses are excluded.

Required Symposium

The Human Computer Interaction Interdepartmental Graduate Program organizes an annual forum open to the public in the spring. This forum highlights student research through oral presentations, poster sessions, and demonstrations. The forum is generally held in April of each year, and every student will be expected to participate.

V. Progressing Through the Degree Program

Forms listed in this section can be found in the *Forms* section at the back of this handbook; many are also available online at http://www.grad-college.iastate.edu/common/forms/student_forms.php

ISU Graduate College requirements for the PhD and MS degrees are summarized in the *ISU Graduate College Handbook* available on the web at http://www.grad-college.iastate.edu/common/handbook/Grad_College_Handbook_February_2014.pdf

Included in this handbook as Appendix C are flow charts for *Procedures for Earning an MS Degree* and *Procedures for Earning a PhD degree.* These flow charts provide the best overview and most concise information on earning your degree.

Approval of the Program of Study (POS)

After choosing a major professor and establishing a POS committee, students must file a *Program of Study* form http://www.grad-college.iastate.edu/common/forms/form.php?id=10 The Graduate College *Program of Study* form serves as a contract between the student and the Graduate College, indicating the minimum coursework that must be completed for the PhD or MS degree.

In preparing the Program of Study, the student and major professor should refer to the HCI course requirements to ensure that the planned coursework: 1) meets the HCI requirements, 2) meets all Graduate College requirements, and 3) is appropriate based on the student's planned research project. The POS committee will approve the POS form if these conditions are met. If courses listed on the POS form do not meet all HCI requirements, the POS form will NOT be approved by the HCI program chair (unless a memo of justification is provided by the POS committee). Substitutions for core courses must be requested via e-mail to the HCI program chair with a copy to the major professor. These requests are required before registering for any proposed substitute core course.

Tips for Scheduling POS Meetings

Scheduling POS committee meetings can be challenging, but there are ways to simplify the task. In consultation with the major professor, the student should select four or five potential meeting timeslots, and then e-mail the other POS committee members asking which times they could be available to meet.

Following the advice of the major professor, the student should indicate the expected duration of the planned meeting in the e-mail message to POS committee members. Send this e-mail request *several weeks prior* to the proposed date of the first POS meeting.

You should make arrangements for the Preliminary Exam and Final Defense (which require longer time slots) *at least one month in advance.* After obtaining faculty responses, the student should

- select a time when everyone can meet
- reserve a conference room
- and notify the POS committee members of the date, time, and location of the meeting.

You should complete the whole scheduling process within two to three days so that timeslots available during the initial inquiry remain available. E-mail is the most efficient means of scheduling these meetings.

It is important (and courteous) to send an e-mail reminder of the meeting time and place to POS committee members *two to three days prior* to the scheduled meeting.

First POS Committee Meeting

In most cases, a student's POS form is approved during the first POS committee meeting. **Approval of the POS must be obtained before the end of the first semester of the student's second year (PhD) or before the end of the first year (MS).**

At least one week prior to the scheduled POS committee meeting, students should prepare the following documents:

- Proposed POS form
- Description of Proposed Research

The Description of Proposed Research is concise (usually 2-3 pages) and summarize the major objectives of the research project and planned approaches to achieve these objectives. The Description of Proposed Research is expected to be preliminary; it is understood that the student's plans may change as the research progresses. The written proposal is viewed as a tool to help the student plan the dissertation or thesis research and to aid the POS committee members in evaluating whether the proposed POS coursework is appropriate.

After the Program of Study has been approved by the Graduate College, changes to the POS may be made only with the approval of the POS committee and the Graduate College.

Satisfactory Completion of HCI Courses

Student coursework must fulfill the HCI requirements. The POS committee is responsible for ensuring that these requirements have been met and that all required/recommended HCI courses have been satisfactorily completed. In addition, all HCI students must meet the Graduate College Grade Requirements, as described below.

Graduate College Grade Requirements

A cumulative GPA of at least 3.0 is required by the Graduate College for one-half tuition support. The grading scale at ISU is as follows: A (4.0), A- (3.67), B+ (3.33), B (3.0), B- (2.67), C+ (2.33), C (2.0), C- (1.67), D+ (1.33), D (1), and F (0). Research grades (699) do not count toward the GPA.

Preliminary Examination (PhD only)

The Graduate College requires that all PhD students pass a Preliminary Examination before advancing to candidacy for the doctoral degree. To initiate this process, the student must file a *Request for Preliminary Examination* form (available from department and program administrative offices and the Graduate College). **The Preliminary Examination meeting is completed before the end of the first semester of the third year and must take place at least 6 months prior to the final defense.** All POS committee members must be present. The examination must contain both a **written** and an **oral** component. Master's degree candidates are not required to take a Preliminary Examination. Research proposals that serve as the written component of the Preliminary Examination are submitted to the POS committee and HCI office *at least two weeks* before the Preliminary Examination.

Writing the Dissertation or Thesis

The thesis is due generally two weeks prior to graduation. Thesis deadlines for the semester are found at http://www.grad-college.iastate.edu/calendar/

The *Electronic Thesis/Dissertation* webpage found at http://www.grad-college.iastate.edu/current/thesis/ provides thesis format requirements as well as submissions requirements and procedures. If research data from other students or researchers is included in the thesis (e.g., the student is one of several co-authors on a manuscript included in the thesis), instructions in the *ISU Thesis Manual* describe how to clearly indicate co-authors' roles in the research and/or preparation of the manuscript.

Students should refer to the *Thesis Checklist* found at http://www.grad-college.iastate.edu/current/thesis/checklist/

The university instituted an electronic theses submission process beginning in the Fall 2006 semester. Directions for submitting your thesis can be found in the links above.

Students must provide the HCI Program Office with an electronic copy of their dissertation or thesis. The e-portfolio will also include the thesis.

Application for Graduation

Students must submit to the Graduate College an *Application for Graduation (Diploma Slip)* indicating the expected semester of graduation. This is now done through the student's AccessPlus account. It must be submitted by the deadline. Deadlines can be found at http://www.grad-college.iastate.edu/calendar/ If a student does not graduate at the expected time, a new Application for Graduation must be submitted for a subsequent semester.

Final Examination

The Final Examination for the PhD or MS degrees is an oral defense of the PhD dissertation or MS thesis. This defense includes a required formal seminar presentation of dissertation or thesis research to the Human Computer Interaction faculty, students, and other members of the Iowa State academic community. Students in the Online MS program present their final capstone project as their final oral exam.

Students should submit a *Request for Final Examination* form after the dissertation or thesis work has been completed and all the other requirements have been met. After receipt of this form, the Graduate College will send a *Report of Final Examination* form directly to the major professor. The major professor is responsible for bringing this form to the final oral examination.

Students should provide the HCI office with the text of their formal seminar announcement *at least two weeks prior* to the seminar. An e-mail message will be sent to the HCI and Virtual Reality Applications Center (VRAC) faculty and graduate students announcing the seminar. Following the public seminar (usually, but not always immediately afterwards), an oral examination (closed to the public) will be administered by the POS committee. All members of the POS committee must be present at this meeting. This examination will review the dissertation or thesis as well as the candidate's knowledge of relevant subjects.

Students should provide the HCI Program Coordinator a copy of your e-portfolio.

HCI Exit Interview

After receiving the *Graduate Student Approval Slip for Graduation* from the Graduate College, students should meet with the Program Coordinator for an exit interview. The Program Coordinator will obtain some post-graduation information and then the HCI Chair will sign the *Approval Slip.* If a CD copy of the thesis or dissertation has not already been provided to the HCI office, it is then given to the HCI Program Coordinator at the exit interview. If an exit interview is not conducted, the HCI Exit Survey should be completed and returned to the HCI Program Coordinator.

After Graduation

Letters of Recommendation

When letters of recommendation are needed for future employment or grant proposals, students should directly contact faculty to ask whether they are willing to serve as referees. If so, students should provide the following:

- Adequate advance notice *(at least three to four weeks)*;
- A copy of the job posting or job description;
- A current Curriculum Vitae; and
- An e-mail reminder one week before the recommendation deadline.

It is courteous (and wise) to send referees a complete numbered list of the letters needed, with deadlines clearly indicated AND pre-addressed labels. An electronic copy of this address list is usually appreciated.

Dismissal

Continuing registration as a graduate student at Iowa State University is contingent upon maintaining good standing in a graduate major. The Human Computer Interaction Interdepartmental Graduate Program expects HCI students to complete their degrees in a satisfactory and timely manner. However, there are certain situations that may require severing the relationship between a student and the HCI program.

Dismissal Criteria

A student may be dismissed—removed from the degree program and not permitted to register as an HCI student—for the following reasons:

- Failure to progress satisfactorily in his/her degree program

  This may be evidenced by a lack of research progress, a lack of aptitude or a failure to maintain satisfactory academic standing as defined by the Iowa State University *Graduate College Handbook.*

- Academic dishonesty

  The proper conduct of science requires the highest standards of personal integrity. Because of this, the University and HCI program consider dishonesty in the classroom or in the conduct of research to be a serious offense. Students accused of academic dishonesty will be dealt with according to the procedures outlined in the *University Catalog* and the *Faculty Handbook*. Possible punishments can include dismissal from the program and expulsion from the University, depending on the severity of the offense.

Dismissal Procedures

A student's POS committee—or, if the student has no POS committee, the student's major professor—can recommend dismissal of a student for either of the reasons listed above. Recommendations for dismissal are made to the HCI Chair and are acted on by the HCI Supervisory Committee.

Procedures for dismissal are as described in the ISU *Graduate College Handbook*. Before a dismissal is decided, the HCI Chair must give the student a written notice explaining why dismissal is being considered. The HCI Chair must also discuss the situation with the student as well as with the POS committee, major professor and/or Supervisory Committee in an attempt to find a satisfactory resolution. This discussion constitutes the "informal conference" as described in the *Graduate College Handbook*. If a satisfactory resolution cannot be reached and the Supervisory Committee votes to dismiss the student, either party may bring the issue to the attention of the Associate Dean of the Graduate College for a decision, as described in the *Graduate College Handbook*.

Responsibilities of HCI and the Major Professor

It is the responsibility of the HCI program to counsel students who are having academic difficulties and, if necessary, to help the students identify and apply to other appropriate degree programs. It is the responsibility of the major professor and his/her department to seek funds for a student's assistantship and for the conduct of research.

Relationship between Status in HCI and Termination of Financial Support

All HCI students are admitted either with full graduate assistant or external support. Acceptance into the program is based on continued support throughout a reasonable period of time toward degree completion. Students with any doubt about their assistantship status should discuss the situation with their major professor or the HCI Chair. For further information on termination of assistantship appointments, see the *Graduate College Handbook*.

Appeal Process

The University has established appeal processes for student grievances. These vary depending on the nature of the grievance, and are described in the *Graduate College Handbook*. Generally, these procedures begin with the program chair or the appropriate Department Executive Officer. It is usually best for all parties if a satisfactory resolution can be reached without initiating a formal appeal process. The Associate Dean of the Graduate College is available to consult informally with students and faculty.

VI. Campus Resources

Links to a number of campus resources for graduate students are available. Some of these include:

Graduate and Professional Student Senate (GPSS)

The Graduate & Professional Student Senate is an elected body whose mission is to represent the interests of Iowa State graduate students and to promote social interaction among graduate students. The GPSS website is https://www-gpss.sws.iastate.edu/

HCI will have two representatives to the Graduate Student Senate during the 2013-2014 year. They are:

R.Colin Ray
1620 Howe Hall
rcray@iastate.edu

Mandela Magnidjem
1620 Howe Hall
mmdjino@iastate.edu

Student-sponsored Seminars

HCI students are encouraged to recommend invited speakers for Human Computer Interaction seminars on campus. Requests for external speakers are submitted to the HCI program office and will be considered based on available funding through the program. The program will invite a top-caliber visiting scientist each year for the HCI Open Forum.

VII. Financial Matters

Graduate Appointments and Assistantships

All students studying on campus in the Human Computer Interaction Interdepartmental Graduate Program receive some form of financial support from either an on-campus or an external source. Both the source of the support and the responsibilities associated with it vary from situation to situation. New HCI students are admitted to the program in one of two categories discussed in Section III. Stipends for students admitted as transfers, co-majors, or concurrent degree candidates are provided by major professors or home departments and are governed by departmental policies. The responsibilities associated with a stipend are determined by the major professor.

All graduate students on assistantships sign a *Graduate Assistantship Letter of Intent* that lists the terms and conditions of their appointment. Generally, graduate assistantship appointments are on a half-time basis. "Half-time" is the maximum time appointment for graduate students; the remaining "half-time" is spent as a student in graduate studies and research. Please note the following three conditions associated with graduate assistantships and letters of intent.

- Financial constraints and program changes may result in adjustment in specific responsibilities and/or sources of funds during the period of appointment.
- The *Graduate Assistantship Letter of Intent* is based on the University fiscal year and does not imply that support will terminate on the end date noted in the *Letter of Intent*.
- HCI students will receive continued Graduate Assistantship support for the duration of PhD degree work as long as students remain in good standing. The specific source(s) of funding may vary depending on resources available to the major professor.

Appointments can be terminated by mutual consent or for reasons as described in the *Graduate College Handbook*. Any questions regarding graduate appointments are directed to the HCI office, 1620 Howe Hall.

The University payday is the last workday of each month, with pay deposited directly into students' bank accounts. The Benefits Office (3350 Beardshear) must be advised of any bank account changes. Deductions are made for Federal and State income taxes and Social Security, if applicable.

Professional Advancement Grants

The Graduate and Professional Student Senate provides funds not only to support attendance at professional meetings, but also to support graduate student research and childcare. Information and forms are available on the GPSS website at https://www-gpss.sws.iastate.edu/ , under Professional Advancement Grants.

Benefits

Student Health Insurance
Single student coverage under the Iowa State University Student Health Insurance Plan is provided free of charge to all graduate assistants at ISU. You can enroll or re-enroll through AccessPlus. Go to the student tab, then health insurance. Click on the enroll tab in the upper left corner.

If you have dependents on your plan, then you are required to re-enroll each year in order for their coverage to continue. Same with the dental plan, if you wish for that to continue you are required to re-enroll each year.

The ISU Students and Scholars Health Insurance Program (SSHIP) website can be found at http://www.hrs.iastate.edu/hrs/sship

If you have any questions, you can contact the Student and Scholar Insurance Program by phone at 515-294-4800 or by email at isusship@iastate.edu. Their office is located at 3810 Beardshear.

All international students are required to carry the ISU Student Health Insurance or to be covered by another health insurance policy. For more information, contact the International Students and Scholars office in Suite 3242/3248 Memorial Union (294-1120).

Prescription Drug Benefit Program
Graduate students receive single coverage free of charge in a prescription drug benefit program that reduces the cost of generic and prescription drugs available a the Student Health Center. For information, contact the Student Health Center Pharmacy (294-7983).

Health Service
All students have access to services provided by the ISU Student Health Service. A mandatory health fee of $98 per semester ($49 for summer session) and a health facility fee of $8 per semester ($4 for summer) are assessed to all students registered for five or more credits. This health fee pays for some services offered at the Student Health Center. The health facility fee applies to the cost of the new Student Health Center and is optional for students enrolled for fewer than five credits. The health fee can be increased without notice.

Additional information about the student group plan medical insurance and the benefits of the mandatory health fee can be obtained from the Thielen Student Health Center (294-5801). Information about the Student Health Service also is available in the ISU General Catalog and on the web at http://www.cyclonehealth.org/

Activity Fee
The ISU Activity Fee provides several benefits such as access to the Lied Recreation Center and student admission rates to concerts, lectures, debates.

Leave

The *Graduate College Handbook* states:

> *Arrangements for a leave of absence are made between the graduate assistant and that assistant's supervisor. When a graduate student employee needs to be absent either for personal reasons or illness, the supervisor should be understanding and accommodating to that need. At the same time, the graduate assistants should attempt to plan personal leave so that it does not interfere with or cause neglect of the duties associated with his or her appointment. Supervisors of graduate assistants are responsible for ensuring that their assistants do not exceed reasonable limits for leave.*

All ISU students with assistantship appointments are employees of ISU and, as such, are allowed the regular university holidays: New Year's Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day, plus one additional day each year determined by the university administration. Absences for other time off must be arranged with the major professor as outlined above.

Injuries and Injury Reports

If a student is injured while performing duties as a Graduate Assistant, he or she must submit an *Employers First Report of Injury* as soon as possible. This form is available in AccessPlus. Usually the University's Worker's Compensation insurance carrier will pay for medical care. University Human Resources (UHR) is the ISU contact for workers' compensation issues. If you are paid on research funds administered through VRAC, you may be required to take safety training as determined by your supervisor.

VIII. Administrative Matters

Administrative Assistance

The main administrative office for the Human Computer Interaction Interdepartmental Graduate Program is located in the Virtual Reality Applications Center office in 1638A Howe Hall. The office is open 7:30 a.m. to 4:00 p.m. The HCI Program Coordinator is Pam Shill and can be contacted at 294-2089 or pshill@iastate.edu.

Communications

It is vital that students maintain good contact with Human Computer Interaction personnel through their graduate program. There are a number of ways to do this:

Student Contact Information
The HCI program maintains a record of each student's current e-mail address, local home address and telephone number, as well as campus address and telephone number. It is important that students advise the HCI program office of any address changes.

E-mail
Students should check e-mail at least daily, as this is the **primary means** of keeping students informed about HCI program activities. Your ISU email is used as your primary contact. You have the option of forwarding your ISU email to another email account of your choice.

Internet
The HCI website contains most of the information pertaining to ongoing program events, and is updated regularly. Students should visit the website regularly at www.hci.iastate.edu.

Campus Mail Service
All HCI students supported on contracts through VRAC have a mailbox in Howe Hall. The student's home department will arrange a permanent campus address and mailbox as well.

Telephone
Local calls can be made on most campus phones. Long distance calls can be made on University phones only with the prior approval of the person to whom the phone is assigned. In some cases, a long-distance authorization code can be obtained through your major professor to be used on restricted telephones.

Transportation

Bicycles
Bicycle racks are located throughout campus. Except for walks labeled as bike paths, bicycle riders are prohibited from using campus sidewalks. Bicycles used between sundown and sunrise must be equipped with a headlight, taillights or an adequate reflector and a warning device. To assist in recovering lost or stolen bicycles, students should register bicycles at Ames City Hall (515 Clark Avenue) or the ISU Department of Public Safety (Armory). Registration can also take place online at https://www-parking.sws.iastate.edu/permit/bike/ There is no charge for bicycle registration.

Buses
CyRide is the Ames bus system. Students can ride all CyRide routes free of charge upon presentation of a current *ISU* card. During the school year, buses leave from most locations every 20 minutes. Schedules are widely available throughout the campus. Further Cy-Ride information can be found at http://www.cyride.com.

Cars and Parking
A copy of the ISU Traffic and Parking Regulations can be obtained from Public Safety, Parking Division, 27 Armory (also available online at http://www.parking.iastate.edu/about/docs/ParkingManualChangesfor2012.pdf). Consult the handbook section pertaining to students.

Professional Ethics

It is imperative that every student understand the ethical standards of science and conduct his or her scholarly activities accordingly. Scientists who commit unethical acts, whether from carelessness, ignorance, or malice, quickly lose the respect of the scientific community. Scientific misconduct includes such activities as:

- Falsification of data, ranging from fabrication to deceptively selective reporting, including the purposeful omission of conflicting data with the intent to falsify results
- Plagiarism: representation of another's work as one's own
- Misappropriate of the ideas of others: unauthorized use of privileged information
- Misappropriation of funds or resources for personal gain
- Falsification of one's credentials

At ISU, these acts are taken very seriously and constitute "academic misconduct" (*ISU Faculty Handbook*, Fall 2006). Individuals found guilty of academic misconduct may suffer a variety of penalties up to and including expulsion from the university.

If a student is aware of a potentially unethical situation, he or she should seek the advice of a trusted professor. Students may also contact the HCI Chair or a member of the HCI Supervisory Committee. All discussions with the Chair and the Supervisory Committee members will be confidential. Alternatively, students may go directly to the Associate Vice Provost for Research, who is responsible for investigating charges of academic

misconduct on campus. It is very important to protect the rights of the individual whose actions are questioned. Frivolous accusations of misconduct and vicious spreading of rumors are just as unethical as fabrication of data or plagiarism.

NON-DISCRIMINATION AND AFFIRMATIVE ACTION POLICY

IOWA STATE UNIVERSITY

(July 1, 2005 Reaffirmation)

Iowa State University is committed to developing and implementing a program of nondiscrimination and affirmative action, a responsibility the university accepts willingly because it is the right and just thing to do. Because an educational institution exposes the youth of Iowa and of the nation to a multitude of ideas that strongly influence their future development, it is an area of our society where removing barriers is critical. We insist on promoting the concept of inclusion and participation.

This commitment is part of a larger commitment to develop a safe and supportive climate for all members of the ISU community in classrooms and laboratories, in offices, in the residence hall system, and throughout the campus. Iowa State University recognizes that a non-discriminatory environment complements a commitment to academic inquiry and intellectual and personal growth.

The goal is to provide a non-discriminatory work environment, a non-discriminatory living and learning environment and a non-discriminatory environment for visitors to the campus. Iowa State University herein recommits itself to comply with all federal and state laws, regulations, and orders, including the policies of the Iowa Board of Regents, which pertain to nondiscrimination and affirmative action.

All administrators and personnel providing input into administrative decisions are directed to ensure that all decisions relative to employment, conditions of employment and access to programs and services will be made without regard to race, color, age, religion, national origin, sexual orientation, sex, marital status, disability, or status as a U.S. Vietnam Era Veteran. Exceptions to this directive may be made in matters involving bona fide occupational qualifications, business necessity, actions designed to eliminate workforce underutilization, and/or where this policy conflicts with federal and state laws, rules, regulations, or orders.

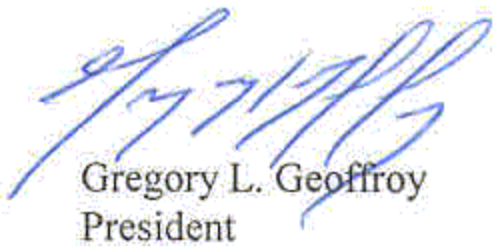
Iowa State University does not discriminate on the basis of race, color, age, religion, national origin, sexual orientation, gender identity, sex, marital status, disability, or status as a U.S. veteran. Inquiries can be directed to the Director of Equal Opportunity and Diversity, 3680 Beardshear Hall, (515) 294-7612. Iowa State University will base employment decisions so as to further the principle of equal employment opportunity and diversity.

No otherwise qualified person will be denied access to, or participation in, any program, activity, service, or the use of facilities on the basis of factors previously enumerated. Reasonable accommodation will be made to facilitate the participation of persons with disabilities in all such activities consistent with applicable federal and state laws, orders and policies.

Further, all supervisory personnel will be responsible for maintaining an environment that is free of racial or sexual abuse and harassment. Acts by anyone that adversely affect another person's employment, conditions of employment, academic standing, receipt of services, and/or participation in, or enjoyment of, any other activity, will be regarded as a violation of university policy and thereby subject to appropriate disciplinary action. Retaliation against persons filing complaints, for bringing the violation of this policy forward for review, or for assisting in a review, pursuant to a filed complaint or grievance, is prohibited.

Iowa State University's commitment to nondiscrimination and affirmative action is of the highest priority and is to be adhered to as such. It applies to all university-sponsored programs and activities as well as those that are conducted in cooperation with the university.

Iowa State University has designated and assigned Carla R. Espinoza as the affirmative action officer and assigns overall program responsibility to her as the Director of Equal Opportunity and Diversity. Questions regarding complaints and/or compliance with affirmative action or equal opportunity should be directed to: Carla R. Espinoza, 3750 Beardshear, Iowa State University, Ames, IA 50011-2033, 515/294-7612.



Gregory L. Geoffroy
President

Reaffirmed on July 1, 2005

The University has designated several offices that provide assistors for those individuals who feel they have been subjected to sexual harassment. An assistor is an individual who can provide support, explain alternatives and accompany a complainant to mediation or complaint sessions. An assistor can act in conjunction with, but not in lieu of, a complainant. Assistors are available in the Virtual Reality Applications Center, the Dean of Student's Office, in the Women's Center, and in each college. The name of the individual designated by a unit or a college as an assistor can be obtained at any of the sources named above or at the college office. All contacts with information sources and assistors are confidential. Talking to an assistor is not filing a complaint, nor will an individual be required to take any specific action following a visit with an assistor.

Individuals may visit with an assistor and be assured that no action will be taken without the individual's consent. Similarly, discussing a situation with an assistor does not constitute notification to the university, and the university is not required to act

Appendix A

Forms

A. **Registration Worksheet**
Available online at
http://www.registrar.iastate.edu/sites/default/files/uploads/forms/regwk.pdf

B. **Request for Schedule Change or Restriction Waiver (Add/Drop Slip)**
Three-part form is available from the HCI office and department offices. A scanned copy is included in this handbook.

C. **Request to Establish a Home Department for Students Admitted to Interdepartmental Majors**
Available online at http://www.grad-college.iastate.edu/common/forms/form.php?id=20&type=2

D. **Recommendation for Committee Appointment**[1]

E. **Request to Change Committee Appointment**[1]

F. **Program of Study (POS)**[1]

G. **Program of Study (Supplement)**[1]

H. **Modifications to the Program of Study**[1]

I. **Request for Professional Advancement Grant (Research or Travel Minigrant)**
Available online at https://www-gpss.sws.iastate.edu/students/pag/

J. **Request for Preliminary Examination**
Four-part form is available from the HCI office, department offices and the Graduate College.

K. **Copyright Permission Form**[2]

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[1] Form is available on the Graduate College forms page at http://www.grad-college.iastate.edu/common/forms/student_forms.php

[2] Form is available on the Graduate College thesis manual website at http://www.grad-college.iastate.edu/current/thesis/

L. **Thesis Format Checklist**[2]

M. **Electronic Thesis/Dissertation Submission Checklist**[2]

N. **Thesis/Dissertation Submission Request Form**[2]

O. **Application for Graduation (Diploma Slip)**[2]

P. **Request for Final Examination**
Available online at http://www.grad-college.iastate.edu/common/forms/form.php?id=56&type=2

APPENDIX B

Sample Curricula

The MS Program

Sample I

HCI	575	Computational Perception
JLMC	574	Communication Technology and Social Change
HCI	521	The Cognitive Psychology of HCI
Stat	401	Statistical Methods for Research Workers
HCI	580	Virtual Worlds and Applications
HCI	558	Introduction to the 3D Visualization of Scientific Data
ME	557	Computer Graphics and Geometric Modeling
HCI	591	Seminar in HCI, 2 credits
HCI	699	6-9 Research credits, including thesis research

Sample II

Art GR	672B	Graphic Design & Human Interaction: Design for Social Inclusion
HCI	589	Design and Ethics
HCI	520	Computational Analysis of English
HCI	504	Managing & Evaluating Instructional Technology Programs
CI	503	Theories of Designing Effective Learning and Teaching Environments
CI	511	Technology Diffusion Leadership and Change
HCI	521	Cognitive Psychology of HCI
HCI	591	Seminar in HCI, 2 credits
HCI	699	6-9 Research credits, including thesis research

Sample III

HCI	520	Computational Analysis of English
JLMC	574	Communication Technology and Social Change
HCI	521	The Cognitive Psychology of HCI
HCI	504	Managing & Evaluating Instructional Technology Programs
MIS	533	Data Management for Decision Makers
MIS	534	Electronic Commerce
ME	584	Technology, Globalization and Culture
HCI	591	HCI Seminar, 2 credits
HCI	699	6-9 Research credits, including thesis research

Sample IV

Art GR	672B	Graphic Design & Human Interaction: Design for Social Inclusion
JLMC	574	Communication Technology and Social Change
HCI	575	Computational Perception
HCI	504	Managing & Evaluating Instructional Technology Programs
ArtGR	672A	Graphic Design and Human Interaction: Usability
HCI	521	The Cognitive Psychology of HCI
ArtIS	509	Computer and Video Game Design and Development
HCI	591	HCI Seminar, 2 credits
HCI	699	6-9 Research credits, including thesis research

APPENDIX C

HCI Curriculum Overview

Students Admitted in Fall 2003 through Spring 2005

Required Courses for MS

- PSYCH 521 The Cognitive Psychology of HCI
- MIS 655X Organizational and Social Implications of HCI
- IE 584X Interaction Methods for Emerging Technologies
- Minimum of 3 research credits

Required Courses for PhD:

- PSYCH 521 The Cognitive Psychology of HCI
- MIS 655X Organizational and Social Implications of HCI
- IE 584X Interaction Methods for Emerging Technologies
- Minimum of 9 research credits
- One Research methods course, choose one from the list:
    - Stat 401
    - Psych 508
    - Psych 540
    - Psych 586

Students admitted in Fall 2005 through Spring 2007

Required Courses for MS:

- PSYCH 521 The Cognitive Psychology of HCI
- MIS 655X Organizational and Social Implications of HCI
- IE 584X Interaction Methods for Emerging Technologies OR HCI 575X Computational Perception
- Minimum of 3 research credits

Required Courses for PhD:

- PSYCH 521 The Cognitive Psychology of HCI
- MIS 655X Organizational and Social Implications of HCI

- IE 584X Interaction Methods for Emerging Technologies OR HCI 575X Computational Perception
- Minimum of 9 research credits
- One Research methods course, choose one from the list:
    - Stat 401
    - Psych 508
    - Psych 540
    - Psych 586
    - Stat 430X
    - Psych 522X

Students admitted in Fall 2007 and after:

A Service Requirement was added for both MS and PhD students.

Students admitted in Fall 2008 through the Fall 2009:

Required Courses for MS

- **Core Courses** (choose 1 course from each category below):

  Design

    - HCI 521 — Cognitive Psychology of HCI
    - ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

  Implementation

    - HCI 575 Computational Perception
    - HCI 520 Computational Analysis of English

  Phenomena

    - HCI 655 Organizational and Social Implications of HCI
    - JLMC 598 Communication Technology-Philosophy and Ethics

  Evaluation

    - Stat 401 Statistical Methods for Research Workers
    - Stat 430X Empirical Methods for Computer Science
    - HCI 504 Managing and Evaluating Instructional Technology Programs

- HCI 591 Seminar, 2 credits required

- HCI 699 Research, 3 credits minimum

Required Courses for PhD:

- **Core Courses** (choose 1 course from each category below):

  Design

  - HCI 521 — Cognitive Psychology of HCI
  - ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

  Implementation

  - HCI 575 Computational Perception
  - HCI 520 Computational Analysis of English

  Phenomena

  - HCI 655 Organizational and Social Implications of HCI
  - JLMC 598 Communication Technology-Philosophy and Ethics

  Evaluation

  - Stat 401 Statistical Methods for Research Workers
  - Stat 430 Empirical Methods for Computer Science
  - HCI 504 Managing and Evaluating Instructional Technology Programs

  Two additional courses are required from either the list of core courses above or from the list of recommended electives below, making a total of 6 courses required.

  Recommended Electives

  - CI 503 Theories of Designing Effective Learning and Teaching Environments - *Design*
  - ArtIS 508 Computer Aided Visualization - *Implementation*
  - HCI 603 Advanced Systems Design - *Implementation*
  - HCI/GEOL 558 Introduction to the 3D Visualization of Scientific Data - *Implementation*
  - CprE/ME 557 Computer Graphics and Geometric Modeling - *Implementation*
  - HCI 580 Virtual Worlds and Applications - *Implementation*

- CI 511 Technology Diffusion Leadership and Change - *Phenomena*
- HCI 591, 4 credits required
- HCI 699, 9 credits minimum

- HCI 591 Seminar, 4 credits required

- HCI 699 Research, 9 credits minimum

Students admitted in the Spring 2010:

MS students:

Core Courses (choose 1 course from each category below):
Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI OR
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575X Computational Perception OR
- ENGL/HCI 520 Computational Analysis of English OR
- CprE/ME 557 Computer Graphics and Geometric Modeling

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI OR
- JLMC 598 Communication Technology-Philosophy and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs

HCI 591 Seminar, 2 credits required

HCI 699 Research, 3 credits minimum

PhD Students

Core Courses (choose 1 course from each category below):

Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575X Computational Perception
- ENGL/HCI 520 Computational Analysis of English
- CprE/ME 557 Computer Graphics and Geometric Modeling

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI
- JLMC 598 Communication Technology-Philosophy and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs

- HCI 591 Seminar, 4 credits required

- HCI 699 Research, 3 credits minimum

Two additional courses are required from either the list of core courses above or from the list of recommended electives below, making a total of 6 courses required.

Recommended Electives

- CI 503 Theories of Designing Effective Learning and Teaching Environments - *Design*
- ArtIS 508 Computer Aided Visualization - *Implementation*
- HCI/CI 603 Advanced Systems Design - *Implementation*
- HCI/GEOL 558 Introduction to the 3D Visualization of Scientific Data - *Implementation*
- HCI/ME 580X Virtual Worlds and Applications - *Implementation*
- CI 511 Technology Diffusion Leadership and Change - *Phenomena*

Students admitted in the Summer 2010 through Fall 2010:

MS students:

Core Courses (choose 1 course from each category below):
Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI OR
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575X Computational Perception OR
- ENGL/HCI 520 Computational Analysis of English
- CprE/ME 557 Computer Graphics and Geometric Modeling
- HCI 574X Computational Implementation and Prototyping in HCI

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI OR
- JLMC 598 Communication Technology-Philosophy and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs

HCI 591 Seminar, 2 credits required

HCI 699 Research, 3 credits minimum

PhD Students

Core Courses (choose 1 course from each category below):

Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575X Computational Perception
- ENGL/HCI 520 Computational Analysis of English
- CprE/ME 557 Computer Graphics and Geometric Modeling
- HCI 574X Computational Implementation and Prototyping in HCI

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI
- JLMC 598 Communication Technology-Philosophy and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs

- HCI 591 Seminar, 4 credits required

- HCI 699 Research, 3 credits minimum

Two additional courses are required from either the list of core courses above or from the list of recommended electives below, making a total of 6 courses required.

Recommended Electives

- CI 503 Theories of Designing Effective Learning and Teaching Environments - *Design*
- ArtIS 508 Computer Aided Visualization - *Implementation*
- HCI/CI 603 Advanced Systems Design - *Implementation*
- HCI/GEOL 558 Introduction to the 3D Visualization of Scientific Data - *Implementation*
- HCI/ME 580X Virtual Worlds and Applications - *Implementation*
- CI 511 Technology Diffusion Leadership and Change - *Phenomena*
- HCI 591, 4 credits required
- HCI 699, 9 credits minimum

Students admitted in the Spring 2011 through the Fall 2011:

MS students:

Core Courses (choose 1 course from each category below):
Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI OR
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575X Computational Perception OR
- ENGL/HCI 520 Computational Analysis of English
- CprE/ME 557 Computer Graphics and Geometric Modeling

- HCI 574X Computational Implementation and Prototyping in HCI
- HCI 585X Developmental Robotics

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI OR
- HCI 589X Design and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs
- PSYCH 501X Foundations of Behavioral Research

HCI 591 Seminar, 2 credits required

HCI 699 Research, 3 credits minimum

PhD Students

Core Courses (choose 1 course from each category below):

Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575X Computational Perception
- ENGL/HCI 520 Computational Analysis of English
- CprE/ME 557 Computer Graphics and Geometric Modeling
- HCI 574X Computational Implementation and Prototyping in HCI
- HCI 585X Developmental Robotics

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI
- HCI 589X Design and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs

    - PSYCH 501X Foundations of Behavioral Research

- HCI 591 Seminar, 2 credits required

- HCI 699 Research, 3 credits minimum

Two additional courses are required from either the list of core courses above or from the list of recommended electives below, making a total of 6 courses required.

Recommended Electives

- CI 503 Theories of Designing Effective Learning and Teaching Environments - *Design*
- ArtIS 508 Computer Aided Visualization - *Implementation*
- HCI/CI 603 Advanced Systems Design - *Implementation*
- HCI/GEOL 558 Introduction to the 3D Visualization of Scientific Data - *Implementation*
- HCI/ME 580X Virtual Worlds and Applications - *Implementation*
- CI 511 Technology Diffusion Leadership and Change - *Phenomena*

Students admitted in the Spring 2012 and forward:

MS students:

Core Courses (choose 1 course from each category below):
Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI OR
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575 Computational Perception OR
- HCI 573X User Interface Implementation for Web Application
- CprE/ME 557 Computer Graphics and Geometric Modeling
- HCI 574X Computational Implementation and Prototyping in HCI

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI OR
- HCI 589X Design and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs
- PSYCH 501X Foundations of Behavioral Research

HCI 591 Seminar, 2 credits required

HCI 699 Research, 3 credits minimum

PhD Students

Core Courses (choose 1 course from each category below):

Design

- HCI/PSYCH 521 — Cognitive Psychology of HCI
- ArtGR 672B — Graphic Design and Human Interaction: Design for Social Inclusion

Implementation

- HCI 575 Computational Perception
- CprE/ME 557 Computer Graphics and Geometric Modeling
- HCI 574 Computational Implementation and Prototyping in HCI
- HCI 573X User Interface Implementation for Web Application

Phenomena

- HCI/MIS 655 Organizational and Social Implications of HCI
- HCI 589X Design and Ethics

Evaluation

- STAT 480 Statistical Computing Applications OR
- ENGL/STAT 332 Visual Communication of Quantitative Information OR
- HCI/CI 504 Managing and Evaluating Instructional Technology Programs
- PSYCH 501X Foundations of Behavioral Research

- HCI 591 Seminar, 2 credits required

- HCI 699 Research, 3 credits minimum

Two additional courses are required from either the list of core courses above or from the list of recommended electives below, making a total of 6 courses required.

Recommended Electives

- ArtIS 508- Computer Aided Visualization - *Implementation*
- CI 503 - Theories of Designing Effective Learning and Teaching Environments - *Design*
- CI 511- Technology Diffusion Leadership and Change - *Phenomena*
- HCI 520- Computational Analysis of English - *Implementation*
- HCI 522- Scientific Methods in HCI - *Evaluation*
- HCI 558- Introducation to the 3D Visualization of Scientific Data - *Implementation*
- HCI 580X - Virtual Worlds and Applications - *Implementation*
- HCI 585X - Developmental Robotics - *Implementation*
- HCI 594- Organizational Applications of Collaborative Technologies and Social Media
- HCI 595- Visual Design for HCI - *Design*
- HCI 596- Emerging Practices in Human Computer Interaction - *Evaluation*
- HCI 603- Advanced Learning Environments Design - *Implementation*
- HCI 681X - Cognitive Engineering
- IE 577- Human Factors
- ME/FLNG 584 - Technology, Globalization and Culture - *Phenomena*
- STAT 401- Statistical Methods for Research Workers - *Evaluation*

Online MS Students

Core Courses:

- HCI 575 Computational Perception
  OR HCI 574 Computational Implementation and Prototyping
  OR HCI 573X User Interface Implementation for Web Application
  OR CprE/ME 557 Computer Graphics and Geometric Modeling
- HCI 655 Organizational and Social Implications of HCI
  OR HCI 589X Design and Ethics
- HCI 521 The Cognitive Psychology of HCI
- HCI 598 HCI Design, Implementation and Implications

Certificate Students

Core Courses:

- HCI 575 Computational Perception
  OR HCI 574 Computational Implementation and Prototyping
  OR HCI 573X User Interface Implementation for Web Application
  OR CprE/ME 557 Computer Graphics and Geometric Modeling
- HCI 655 Organizational and Social Implications of HCI
  OR HCI 589X Design and Ethics
- HCI 521 The Cognitive Psychology of HCI

APPENDIX D

Procedures for Earning an MS Degree and *Procedures for Earning a PhD degree*

Also online at:
http://www.grad-college.iastate.edu/degree/earning.html