

PROCEDURES FOR A PROJECT:

for the

*Master of Science in
Human-Computer Interaction*

HCI GRADUATE PROGRAM

Indiana University School of Informatics

535 West Michigan Street
Indianapolis, IN 46202
Indiana University - Purdue University, Indianapolis

(IUPUI)

Contents

HCI GRADUATE FACULTY	3
I. GETTING STARTED	4
Difference between a Graduate Thesis and Graduate Project.....	4
Project Courses.....	4
Thesis Option	5
TCO Project Advisors.....	5
Final Project Committee	6
The HCI Project Advisor and Director of HCI.....	6
II. PROJECT DEVELOPMENT	6
Management	6
Selecting a Final Project Topic	6
Preparing the Full Project Proposal	6
Project Deliverables	6
One or More Person Projects	7
III. PROJECT COURSES – I694 (PARTS ONE AND TWO).....	7
Project Course One – I680 HCI Professional Practice 1.....	8
Project Course Two – I681 HCI Professional Practice 2.....	8
Intent to Graduate.....	9
IV. THE PROBLEM SPACE AND THE RESEARCH PROJECT QUESTION(S).....	9
Overview	9
Problem Space.....	9
Research Project Question(s)	9
V. PAPER PREPARATION, PRESENTATION, AND SUBMISSION.....	10
Paper Editing and Proof Reading.....	10
Paper Review	10
The Oral Defense of the Project.....	10
Paper Formatting Guidelines	11
Final Project Submission	11
APPENDIX	12
Appendix A: Project Proposal	12
Appendix B: Project Proposal Outline.....	13
Appendix C: Format for Paper.....	14
Appendix D: Institutional Review Boards	15
REFERENCES	17

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I. GETTING STARTED

This document is an instrument for ensuring clarity, consistent standards, high-quality and timely completion of a student project. Responsibility for understanding all aspects of the project process, including due dates, deliverables, and obtaining signoff signatures, resides solely with the student.

Difference between a Graduate Project and Graduate Thesis

- **Graduate Project:** Graduate work leading to a Master of Science human-computer interaction (HCI) Project is a professional enterprise in applied research, the primary purpose of which is the advancement of best practice and applied knowledge within the discipline of HCI.
 - Applied research is designed to solve practical problems of the modern world, rather than to acquire new knowledge per se. Applied research can be exploratory, but often is descriptive.
 - Students interested in executing a project must design and implement a system, method, etc. that embodies a novel innovation or improvement; constituting a contribution to HCI. For example, a project may focus on investigating ways to design interactive databases for online e-commerce, arrive at a solution of a particular interaction design problem with international Web sites, or develop and test a unique interface for a medical product that impacts critical care for patients.
 - At the same time, HCI projects should NOT be activities that surround the mere making and testing of existing or newly created interactive products. Rather, (as noted above) students must focus on the innovation of newly developed methods, tools, or interactive products that embody the application of HCI-centered principles and practices.
 - In sum, the focus of an HCI master's project is not basic research, but an original contribution to the applied aspects of the HCI discipline. Graduate students should carefully consider how they might make such a contribution to form the basis of a final project proposal.
- **Graduate Thesis:** Graduate research leading to a written Master of Science HCI Thesis is a scholarly endeavor, the primary purpose of which is the advancement of theoretical knowledge within the discipline of HCI.
 - The focus of an HCI master's thesis is NOT a project, but an original contribution to the discipline of HCI. Graduate students should carefully consider how they might make such a contribution to form the basis of a thesis proposal. (For further details, students should read the document, Procedures for the HCI Thesis.)
 - What distinguishes the Masters thesis and the Ph.D. dissertation is that the doctoral dissertation must be "highly original" and produce a "substantial contribution" to the discipline of study. In the case of doctoral research, the student is posed with greater challenges and a much higher level of rigor.
 - Graduate students that are seriously considering obtaining a Ph.D. should consider writing a thesis, rather than doing a project.

Project Courses

- The Final Graduate Project is a two semester (6 credit hours) culminating activity for the Master of Science degree in HCI. Prior to Fall 2010, students taking the Project option would enroll for the course, I694 Thesis/Project. However, beginning Fall 2010 HCI students doing a project will be instructed to take the Two-Course Option (TCO).
 - TCO is composed of two courses, three credits each. The course titles include:
 - I680 HCI Professional Practice 1 (*offered each fall*)
 - I681 HCI Professional Practice 2 (*offered each spring*)
 - I590 may be a temporary number assigned to these courses.
 - Students enrolling in each course should note that there is a formally scheduled class time.
 - Students will work on one final project that extends throughout the two courses.

- Students will receive an official grade at the conclusion of each course.
- Students are encouraged to take on a project that can be realistically finished by the time they complete both courses. Incompletes will NOT be permitted.
- Students taking TCO are NOT required to take I575 (*Informatics Research Design*), which is reserved primarily for HCI Master's Thesis students and Ph.D. students. However, TCO students may take I575 as an Elective. TCO student may also take I624 (*HCI Advanced Seminar I*) as an Elective with permission from the instructor.
- Students must prepare a project proposal submitted to their TCO project instructor/advisor. Students should have their proposal approved within the first week (or shortly after) they enroll in I680 HCI Professional Practice 1.

Thesis Option

- Regarding the course I694 Thesis/Project, the Thesis option is only reserved for students who plan to pursue a Ph.D. at a later time or have an extreme interest and ability to carry out empirical research.
- The Thesis option must be approved by the students' primary advisor.
- Students taking the Thesis option **MUST** take I575, *Informatics Research Design*.

TCO Project Advisor

- Students taking the project TCO will have as their primary project advisor the faculty member who is teaching the two courses. Other HCI faculty will be available to provide additional support if necessary.
- The TCO faculty member will work closely with students throughout the two semester project process. The faculty member will meet with students on a regular basis, individually or in a small group. This meeting will help establish project timelines and deliverables.
- As noted above, the TCO faculty member will teach I680 and I681. He/she will also meet in a weekly project class where special topics will be presented and students will share their progress and deliverables. The TCO faculty member acts as the lead advisor for student projects, unless the student decided to use another faculty.

Final Project Committee

- The Final Project Committee will be composed of at least two faculty members, which will include the primary project advisor and one additional faculty member from HCI or another area within the School of Informatics. In this case, the advisor will, in most cases, also be the TCO project instructor. Students may also consider faculty from outside the School of Informatics as members of their project committee.
- Other project committee members will work with the primary project advisor to oversee the completion of the student's research project. Committee members must be accessible to the student in order to provide direction throughout the process. Upon agreeing to sit on the student's committee, all committee members must sign the cover sheet of the proposal or send an email confirming agreement. See Appendix A.

The HCI Project Advisor and Director of Human Computer Interaction

The HCI Project Advisor, Project Committee, and Director of Human Computer Interaction must sign off on the final deliverables.

II. PROJECT DEVELOPMENT

Management

Successful completion of your project requires planning and steady execution of your plan. You must manage project expectations in order to complete your project within two semesters. Moreover, students **must** communicate clearly and frequently with your TCO project instructor/advisor.

Selecting a Final Project Topic

- In consultation with the TCO project instructor/advisor, the student must decide on an action plan suitable for graduate level applied research. This will include the project topic and a detailed timeline for each phase of the work up to the date of submitting all deliverables to the TCO project instructor/advisor.
- A project topic should be decided upon by the end of the student's first year in the HCI program. It is especially important for full-time students to begin their final project immediately upon entering their third semester in the program. Because part-time students are under a different schedule for graduation, they may begin at a later time. Once the topic is agreed upon by the TCO project instructor/advisor, an email must be sent to each party confirming the decision.
- Students may formulate their own project topic under the direction of the TCO project instructor/advisor.

Preparing the Project Proposal

- Each student must complete their research project proposal through the end of the methods section. Students must give considerable thought to what exactly they want to do. Their writing style must be concise. This will not be the time for too many details, as in the expanded paper or thesis, but it must clarify exactly what the student is interested in doing. See Appendix B below.
- The project proposal, when completed, will serve as a framework for the first three sections of the student's paper. As the project develops, there will inevitably be modifications, but the primary structure of the paper (up to the methods section) will be complete. The process of writing the project proposal may take numerous iterations to receive approval.

Project Deliverables

The following is a list of deliverables for which the student is responsible. Project signoffs indicate completion and acceptance of the deliverable.¹

1. Project Proposal. Your proposal is an outline of your project, with a development plan. It must include:
 - a. Student name,
 - b. Student primary adviser(s)' name(s),
 - c. A working title for your project,
 - d. A brief description of the project, including the "problem space" and why the project is important (e.g., potential impact -social, economic, educational, entertainment, etc.),
 - e. Brief for literature review with references, and
 - f. A preliminary plan including a project timeline, proposed observations / user studies, insights, concepts, prototype, business or economic strategies, and all deliverables listed below.
2. Protection of Human Subjects. You must show evidence that you passed the Human Subjects compliance test for IU. This must be done before you begin your usability study if it includes human subjects/participants. Also, before you begin to execute your study, you must receive approval from the IUPUI Human Subjects Committee (HSC).²

¹ Paper or email signoffs for the project are permitted and will be kept with the student's file.

² See the Protection of Human Subjects Web site: <http://research.indiana.edu/rschcomp/hmpg.html> before beginning your project.

3. Project Proposal and Presentation. Students will prepare a project proposal and make a presentation of the project to the TCO project class. This is a more focused version of your Project Proposal, i.e., the Presentation is a way of presenting and “selling” your idea to a client, decision maker, user group, or who ever might be interested in your project. After presenting your proposal to the class, you will receive immediate feedback and suggestions as to how to improve various aspects of the project.
4. Paper. You must produce a short paper, equal in quality to a full length paper submitted to a refereed conference. In cooperation with your advisor, select an appropriate venue for your paper and follow the guidelines for that organization. Include these guidelines with your paper deliverable. In most cases you will submit your paper for publication in the proceedings.³
5. Prototype. You must design and develop a working prototype suitable for demonstration purposes.
6. Usability/Evaluation Studies. Documentation of a usability/evaluation study must be done for your project and should be included in the paper.
7. Supporting Documents. Supporting documents should include all sketches, notes, observations, datasets, analyses, etc. These may be original artifacts, scanned artifacts, or a combination thereof.
8. Project Website and Conference Poster⁴
 - a. Web Site. All students must create a project Web site that provides all relevant information about the project, including a PDF of the short paper, figures, illustrations, etc.
 - b. Poster. The poster is a graphically attractive “one large billboard size” overview of your project suitable for display in the School of Informatics Fall or Spring Capstone time or at a professional conference. The size can vary, but usually is approximately 4’x4’ or 3’x4’.
 - c. Please see examples of professional posters on the IU graduate student website and poster, noted below.
9. Final Project Presentation. Each project requires a 20-minute public presentation to faculty and students with 10 minutes of Q&A. These presentations will occur at the conclusion of the TCO.
10. CD Archive. All materials above should be archived on a CD and submitted to the Office of the Deans, School of Informatics, IUPUI.

One or More -Person Projects with Accompanying Paper

- Two or more students may wish to propose two or more closely related project areas, where one research domain complements the other. While it may seem more complicated to execute and coordinate two related projects than unrelated projects, the advantage is that one person can motivate and stimulate the other. Moreover, the skill-sets of the two or more students may also complement each other; and therefore produce a stronger product.
- Projects are generally a single person enterprise. If, however, the project advisor(s) joins in the submission of the short paper to a conference, the student will be the first author of the paper. Additional authors are at the discretion of the student.

III. PROJECT COURSES – I680 AND I681⁵

- Goals: The Final Project is a two semester culminating activity for your MS in HCI. As noted above, the goal of the TCO is to support the project process and make sure that you will finalize your project on time and with a high degree of quality.
- Attendance is mandatory for all students!

³ Other options to preparing a short conference paper may include a white paper or short article for publication in an online journal, magazine, or other venue appropriate for professional dissemination of your work.

⁴ See project Website and Posters at: <http://www.informatics.indiana.edu/hcid/capstone/projectArchive.asp>

⁵ As noted above, I680 and I681 will begin Fall 2010, substituting “project portion” of I694 Thesis/Project. All students who have not begun their final project or thesis are strongly encouraged to register for I680, HCI Professional Practice 1. Please note that during the 2010-2011 School year, an I590 number will be used in place of I680.

- **Structure:** The two courses will be structured around activities and themes that are of major importance when planning, developing and working with a larger project. The courses will be divided into themes, with each theme addressing specific aspects of design and applied research practice. Most of the class work will be done through open class discussions and sometimes in smaller groups. Experience has shown that active participation in these discussions is crucial to project success!
- **Topics:** The project courses will explore practical design thinking and project planning, choices of project methods, techniques and perspectives. We will also explore, examine and practice the art of creating and managing an HCI portfolio and resume. Specific topics will include:
 - General topics:
 1. The creativity, ideation and framing of a project
 2. Finding inspiration and relevant research and literature
 3. Planning a project or project management
 4. Presenting and selling a project
 5. Dealing with teams and real life situations in design problems
 - Focused thoughts and skills:
 1. Practical issues in design and research processes
 2. Ethical issues and responsibilities
 3. How to abstract and generalize from empirical studies and experiments
 4. How to transform designs into “real” products and processes
 5. How to write short paper prepared for a conference proceeding
 6. How to prepare a presentation and a poster
 - We will also continue to explore and discuss:
 1. Job searching
 2. Interviewing for HCI jobs
 3. How to present a CV and a HCI portfolio

Project Course One – I680 HCI Professional Practice 1 (3 Cr.)

- The purpose of I680 is to begin the project work. At the initiation, students will meet with TCO instructor to agree upon a project topic and timeline. The student will be responsible for completing each stage according to this timeline. Failure to complete all the required portions of the project on time and according to a standard deemed appropriate will result in a reduced final grade for I680.
- Finally, by the completion of I680, students must receive approval from the Institutional Review Boards (IRB) to be sure they are in compliance with federal regulations related to the use of human subjects. To receive approval by the end of Project One, students must submit their application to the IRB office as early in the semester as possible. No study using human subjects can be performed until this approval arrives in paper form from the IRB office. The process of approval can take from 2 to 6 weeks, depending on the level of research (exempt or expedite) and the number of changes the IRB review board expects. Please see Appendix D for more details.

Project Course Two – I681 HCI Professional Practice 2 (3 Cr.)

- Upon completion of I680, students will be allowed to register for I681. The same process of overseeing and assessing their progress step-by-step will take place.
- The primary purpose of I681 will be to conduct and complete the proposed project, including ALL deliverables. The final paper should consist of no less than 5,000 - 8,000 words, not including the front materials, table of contents, abstract, references, and appendices.
- If a student feels a need to produce a lengthier paper, they should remain obtain approval from their project advisor. In other words, students should not work to extend their paper merely to produce bulk. Neither should their paper lack the necessary detail to clearly articulate the purpose of their project and the extent of their findings.

Intent to Graduate

All graduate students must file an “Intent to Graduate” form with the Recorder of the School of Informatics at least six months prior to graduation.

IV. THE PROBLEM SPACE AND THE RESEARCH QUESTION(S)

Overview

- The first stage, leading to project completion, is to determine the specific topic on which you will focus. From this point, a statement of purpose should set out the central direction of the work. Next, one or more clear and concise research questions and/or the problem space must be formed. Questions and the problem space provide a specific clarification for the writing of the statement of purpose and the HCI problem to be addressed.
- The first step is to investigate the conditions and context of product use. Securing the adequate data for knowledge building should include:
 - Potential markets and users (local and global communities), and
 - Economic, social, and cultural contexts surrounding the identified problem space.
- Students design a compelling and innovative conceptual model based upon a methodology that directs reflection on the existing problem solution. Core to the learning process, students integrate and apply theory and design knowledge across the HCI knowledge domains obtained from past HCI courses.

Problem Space

- In the final project, it is imperative that a good understanding of the problem space be identified, specifying what it is to done, why, and how it will support users in the way intended. The problem must be explicitly stated and should not be too broad.
- The challenge with solving an HCI-centered problem is that critical usability goals and user needs are often overlooked. For this reason, the interaction design is best done after we understand the nature of the problem space. To understand the problem space students must clarify usability and user experience goals. The framework for doing this should include logically reasoning through your assumptions about why something might be a novel idea, from which the reader can see the strengths and weaknesses of the proposed project.
- A fundamental aspect of HCI is to develop a conceptual model.
 - Following the defining of the problem space, a conceptual model must be constructed that describes the proposed system in terms of a set of integrated concepts specifically related to what the product should do, how it should behave, what it should look like, and how it might be understood by the intended target users as defined by the users’ needs and requirements.
 - Once the project design and development has begun, students must include iterative prototype design and testing. For example, ethnography is a form of exploratory fieldwork that includes: 1) immersive participatory observation and 2) interpretative methods of analysis that are organized. The method is qualitative, with an emphasis on the informant/user/observer’s experience.

Project Question(s)

- The purpose of the project question(s) is to better define the scope of the problem while keeping the project on track. The question should be a fully articulated statement, expressed in a plain and easy to understand language. It should also be worded in a way that demonstrates and guides the HCI design thinking and all ideation efforts by the student.
- The main question of a project is how the HCI designer will optimize the process to come to a better design solution. To answer the question, a conceptual model of the problem space must be

made. This model describes the declarative knowledge that is used by a designer, the design steps that are taken during the process, and the development of the solution of the design problem.

- Project questions consist of a broad question followed by several related sub-questions. For example, studies consisting of ethnographic research would entail observing users interacting with some form of technology while collecting primarily narrative data. Ethnographic studies are a valid form of inquiry leading to findings that do not necessarily demand the rigor of inferential or descriptive statistics.

V. PAPER PREPARATION, PRESENTATION, AND SUBMISSION

Once the project is completed, students must complete their paper. See the Appendices for paper organization and format, including the cover page for project committee signatures.

Paper Editing and Proof Reading

- It is the responsibility of the student to submit a professionally written paper. Neither the advisor nor any committee member is responsible for proof reading or to act as editor for the student. In many cases, graduate students hire professional editors to proof their papers for grammar, syntax, typographical errors, and general clarity and the logical flow of ideas.
- Students may take advantage of the IUPUI Writing Lab Center to assist them in the early stages of the preparation of their thesis. However, students must be advised that the Writing Lab should not be used in lieu of a professional editor. The expense of hiring a professional editor will serve to produce a well written thesis. Students should consider the employment of a professional editor as a normal course expense.
- Students should also be advised that their paper may be rejected based on a lack of professional execution, regardless of the quality and substance of the project work. In other words, although the content of the paper may meet a professional standard approved by the committee, if it lacks clarity, logic, and grammatical correctness, it may be rejected and the student risks not meeting the deadlines set for graduation.

Paper Review

The graduate student must submit their paper to the project committee that was selected for review and approval. Typically, the TCO instructor and the members of the committee will make suggestions for revising the paper or the project overall. The TCO instructor should walk the student through the outline and written form of the paper to assure that the approach meets academic and professional standards before submitting it to a professional conference.

The Oral Defense of the Project

- As a consummation of the project, all students must formally present and defend their project. After approval by the project committee, the graduate student sets up a time for their defense in the last semester of their graduate work. The graduate student will make an oral defense of their project either at the conclusion of I681 or another agreed upon time. The presentation will be made either to the I681 class or to the project committee; or both.
- If and when the project is presented to the project committee, it will consist of two parts, an open and closed session. The open session give the candidate an opportunity to discuss the project with an audience and the committee. General questions may be raised for the candidate to expound more specifically on particular problems, issues, or project related topics.
- Following the open session, the general public will be excused and the committee will have an opportunity to ask more specific and probing questions regarding the student's project. The closed session is necessary for the committee to make any final recommendations, enhancements or

changes to the project and short paper before submitting it to a conference; and finally to the office of the Dean.

Paper Formatting Guidelines

The paper must adhere to the format outlined by the conference it is being submitted to. Every conference proceedings has specific instructions as to when and how a paper should be submitted. Before a formal submission takes place, students should submit draft copies of their paper to the TCO instructor. All headings and subheads must follow the APA format. All use of citations within the document and references in the Reference section must adhere to the APA format. Students should contact their advisor if they are unclear about paper formatting.

Final Project Submission

- The student must submit their project and paper to the Director of HCI and the TCO instructor.
- Finally, a digital version of the project on CD-ROM must be submitted to the School of Informatics Office of Graduate Studies for posting online by the School of Informatics.

Appendix A

PROJECT PROPOSAL

FORMAT FOR THE COVER PAGE

INDIANA UNIVERSITY SCHOOL OF INFORMATICS
Human-Computer Interaction Program

Graduate Project Proposal

Project Title
Project Subtitle

Student Name
Student Email

Date of Proposal Submission: _____
Date of Graduation: _____

SUPERVISORY COMMITTEE APPROVAL

_____ Primary Advisor / Chair	_____ Signature	_____ Date
_____ Project Committee Member 2	_____ Signature	_____ Date
_____ Project Committee Member 3 (if necessary)	_____ Signature	_____ Date

STUDENT CONFIRMATION

_____ Student Name	_____ Signature	_____ Date
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Appendix B

PROJECT PROPOSAL OUTLINE

STUDENT NAME

PRIMARY ADVISOR

PROJECT TITLE & SUBTITLE

ABSTRACT (*Max. 500 words, one paragraph*)

INTRODUCTION

1. Introduction and importance of subject
2. Problem Space / Target users
3. Research Questions(s)

LITERATURE REVIEW

1. Theoretical background
2. Related HCI topics, if any

METHODOLOGY

1. Participants
2. Treatment or Procedures
3. Data Analysis

REFERENCES

TIMELINE

Appendix C

FORMAT FOR SHORT PAPER

	TITLE	
	SUBTITLE	
	AUTHOR(S)	
	MONTH AND YEAR OF GRADUATION	
ABSTRACT		.
INTRODUCTION		.
Introduction to Project		.
Importance of Project		Error! Bookmark not defined.
Related Research		Error! Bookmark not defined.
LITERATURE REVIEW		ERROR! BOOKMARK NOT DEFINED.
Introduction (Related research, Current practice.)		Error! Bookmark not defined.
Problem Space		Error! Bookmark not defined.
Research Project Question(s)		Error! Bookmark not defined.
METHODOLOGY		ERROR! BOOKMARK NOT DEFINED.
Participants		Error! Bookmark not defined.
Procedures: Design and Testing		Error! Bookmark not defined.
Analysis		Error! Bookmark not defined.
RESULTS (Findings)		ERROR! BOOKMARK NOT DEFINED.
DISCUSSION		ERROR! BOOKMARK NOT DEFINED.
Explanation of Outcomes		Error! Bookmark not defined.
Implications of Results		Error! Bookmark not defined.
CONCLUSION		ERROR! BOOKMARK NOT DEFINED.
REFERENCES		ERROR! BOOKMARK NOT DEFINED.
APPENDICES		ERROR! BOOKMARK NOT DEFINED.

Appendix D

Institutional Review Boards (IRB) Approval

All research conducted at Indiana University-Purdue University Indianapolis (IUPUI) involving human subjects must be reviewed and approved by its respective campus research IRB risk review board. The boards review research plans and monitor ongoing research to insure full compliance with federal regulations and University policies. Protocol submission and requests for approval of research to each of these boards involve *separate procedures*. Therefore, it is important that the investigator initiate each procedure well in advance of any deadlines to allow adequate time for the review and approval process.

All HCI graduate students must be in IRB compliance by submitting the necessary applications to the IRB Advisory Board with enough time before beginning their research. Please see the IRB site, which has all necessary information and forms: http://www.iupui.edu/~resgrad/spon/rescom_human_menu.htm

See the Thesis/Project page for examples of IRB applications:
<http://informatics.iupui.edu/academics/hci/thesis/>

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