Request for a New Graduate Certificate Program
Indiana University School of Informatics
IUPUI

Human-Computer Interaction Certificate

To be offered as a Indiana University Certificate at IUPUI
January 2007

Purpose of the program

In recent years, interest in Human-Computer Interaction (HCI) has grown enormously in both industry and academia. HCI is a multidisciplinary field concerned with the application of computer science, psychology, ergonomics, and many other disciplines in industry and commerce. Its goal is to facilitate the design, implementation, evaluation, and testing of information and communication systems that satisfy the needs of the user. Moreover, HCI research into the user-centered design of usable technology draws extensively on mainstream informatics concerns with cognition, communication, representation, and computation. HCI professionals seek to identify the nature and parameters of human information processing at the interface, to design forms of representation that support human interpretation and use, and to reliably and validly test new technologies for usability and acceptability.

The Association for Computing Machinery[1] (ACM) recently reported that its special interest group in HCI, SIGCHI[2], is the fastest growing of all its interest groups. ACM has recommended the development of new HCI programs in universities to combat a national shortage of professionals with the skills and training to advance the design of more usable technologies. Businesses in software design and other sectors in interactive technology product development are increasingly requesting professionals with HCI expertise that have suitable training in design, evaluation, and the applied social sciences.

Up to now, most individuals working in information technology (IT) have a limited knowledge of HCI theory and best practice. This is because the field is relatively new and there are a very few programs in higher education that specifically train people in this specialty area. For example of the 69 universities in Europe and the United States that have HCI programs, only 37 are in the U.S. This is according to the well-known online HCI Bibliography and Webliography that serves as a comprehensive repository of HCI related information. (See Appendix C for this list.) As a result, limited formal institutes that teach HCI, coupled with rapid technological development, has created a huge demand for specialists in HCI.

Increasingly, the field of IT will demand professionals trained with skills that are augmented by an understanding of HCI and user-centered design principles and practices. In addition to the demand for HCI and usability engineers in the greater U.S., software and Web development companies in Indiana and the surrounding states are in search of individuals who are qualified to provide support in this area. This is substantiated in three ways.

- First, to show the level of demand in the job market we did a simple online search at the IT Web site Dice.com, using the word "usability," which gave 1030 positions in the U.S. on December 22, 2006. These jobs are all directly or indirectly related to usability or the greater field of HCI. Doing the same search for only Indiana, Ohio, Illinois, and Iowa listed 69 usability related positions. And of course, these searches are not comprehensive by any standards.
- Second, personal discussions several years with many IT professionals in the Indianapolis area further suggests the great need for a HCI certificate program. The committee will find enclosed letters that speak to their support for the program.
- Third, to show the increasing interest among local IT and usability professionals, the international organization Usability Professional Association (UPA), established its first Indiana chapter in the winter 2003. Both at its inception and currently, the leading officers of the local chapter are either adjunct faculty or past students of the HCI program at IUPUI.

In sum, the Graduate Certificate Program in HCI is an educational experience that will provide students with advanced training in a broad range of applied theory and techniques. The program will, however, not require a thesis component.

Relation to existing certificate programs

The HCI Graduate certificate program will not compete with any other programs at IU. At the same time, the postgraduate certificate program in HCI will leverage the strengths of the HCI degree program already established in the School of Informatics at both the IUB and IUPUI campuses.

The target audience

This professional, industry-oriented postgraduate certificate program is designed for students with undergraduate degrees in computer science, engineering, information technology, new media, visual communication design, and cognitive psychology; and perhaps other related fields in instructional and educational technology, etc.

Thus far, most students in the existing HCI Graduate Program at IUPUI hold full time jobs in IT or related fields and are primarily practitioners. The other small group of students are international, who usually come to IUPUI to enroll as full time students. Hence, the certificate program will initially be for those who work full time. At the same time, as we develop our online HCI program, students locally and from around the world may be eligible to enroll in the program. At this time, our long-term goal is to provide all 15 credits of the certificate program both online and in the class room to meet the need of a diverse group of interested students.

Graduates from the certificate program will either enhance their current skill set or may choose to continue their learning in the HCI Master's Program offered at IUPUI. In either case, certificate seeking students will receive knowledge and skills that are very hands-on and applicable to their particular IT work.

Plan for sustaining steady-state enrollment

In the first year (Fall 2007), ten to fifteen students will likely participate in the program. It is anticipated that this number will rise rapidly to fifteen or twenty per year in the next two to three years, as the

awareness of the program increases. The potential exists for much greater growth beyond this subsequently.

New resources

No new resources are needed. All courses are currently taught at IUPUI by existing faculty. However, additional full time and adjunct faculty will need to be hired if the program grows beyond our current capacity.

Proposed date of the initiation of the certificate program

Proposed date of implementation is Fall 2007, assuming all necessary approvals have been met.

Persons designated as the certificate program head

Dr. Anthony Faiola, Associate Director of the HCI Graduate Program, Indiana University School of Informatics, IUPUI.

Dr. Mathew Palakal, Associate Dean for Graduate Studies and Research, Indiana University School of Informatics, IUPUI, will provide the school administrative oversight.

Faculty initially involved in the program and their credentials

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Dr. Anthony Faiola

Ph.D., Purdue University, 2005

Email: afaiola@iupui.edu

Site: http://informatics.iupui.edu/people/afaiola

Work: 317-278-4141

Bios: With the dual role of faculty and administrator of the HCI program, Dr. Faiola's pedagogical research focuses on the theory and practice of HCI, human-centered product design and usability engineering. His empirical research focuses on how culture shapes cognitive development and processes that impact Web design and Web use. Dr. Faiola is currently working on a range of medical related devices and web portals to assist health practitioners support patient care. His 25 years of experience in higher education, industry, and administration has placed him in an array of roles and environments, both in the U.S. and abroad. Finally, Dr. Faiola has over 50 publications in the field of communication, design, and HCI/usability and is also a three-time Fulbright Scholar to Russia in communication technology.

Dr. Mathew Palakal

Ph.D., Concordia University, 1987

Email: mpalakal@cs.iupui.edu

Site: http://informatics.iupui.edu/people/mpalakal

Work: 317-278-7689

Bios: The development of Artificial Neural Network (ANN) models as learning and decision-making systems for various AI-related problems are of primary interest. He is involved in projects that include information management, bioinformatics, and intelligent systems.

Dr. Karl MacDorman
Ph.D., Cambridge University, 1996
Associate Professor
Email: kmacdorm@iupui.edu
Site: http://informatics.iupui.edu/people/kmacdorm
Work: 317-222-1964
Bios: Before joining IU, Karl F. MacDorman was an Associate Professor at Osaka University, worked as a software engineer at Sun Microsystems and as chief technology officer for two venture companies. He has published 60 papers in HCI, robotics, machine learning, and cognitive science. His research focus includes android science, machine learning, human-robot interaction, sensorimotor representation, symbol grounding and symbol emergence, computational neuroscience, and computer security.

Dr. Mark Larew
Ph.D., Yale University, 1986
Email: mblarew@INDesign-LLC.com
Site: http://informatics.iupui.edu/people/profile.php?id=71
Work: 317-377-5450
Bios: Mark Larew is a Senior Human Factors Engineer at Indesign, LLC in Indianapolis. At Indesign, and in his former position with Bell Laboratories, he has represented the user's point of view in the design of a variety of electronic products. He has conducted studies to observe and analyze the interactions of representative users with products. Research interests include usability testing methods and applications of theories of human cognition to ser interface design and instructional design.

Admissions requirements and procedures

General Admission Requirements for the Graduate Certificate in HCI:
Admission requirements and procedures are the same as those established for the Human-Computer Interaction Program Master's Degree in the School of Informatics. Specifically, students will be required to submit an application through the graduate school and receive a full review by the Informatics Graduate Admissions Committee, i.e., the review will take place for both master's and certificate seeking applicants. Moreover, certificate seeking applicants will need to submit the same documentation and meet the same criteria as master's seeking students, e.g., undergraduate GPA scores and references letters. GREs are not required for either. Key differences are that certificate students will NOT be required to complete an additional 15 credit hours of course work and a write a thesis.

For further information, refer to the online IUPUI bulletin, also reviewed at http://informatics.iupui.edu/academics/hci/. (See Appendix D) Students admitted directly to the Human-Computer Interaction graduate program may earn this certificate in conjunction with their M.S. degree provided that all the requirements of the certificate program are satisfied.

Completion requirements and audit and certification procedures:

General Course Requirements: 15 graduate credit hours are required, including:

- Two core courses (6 credits)
- Three specialization courses (9 credits)

Specific Requirements

Core (6 credits)

- I541 HCI Design - 1
- I561 HCI Design - 2

Specialization (9 credits)

- I563 Psychology of HCI
- I543 Usability and Evaluative Methods in Interactive Design
- I564 Prototype Design for Interactive Systems

Total 15 cr.

Minimum overall GPA

Successful completion of the certificate requires at least a B average over all courses counting towards the certificate. Courses with a grade of C- or less must be taken again to count towards the certificate. The minimum grade that will be accepted in any single course is C.

Maximum number of credits that can be transferred from another institution

Applicants who have already earned credit for one or more of the equivalent courses from other institutions and other certificate programs may request to apply up to a maximum of three credits of these courses toward this certificate. Any waivers or substitutions must to be approved by the committee that oversees the program.

Maximum number of undergraduate courses that can be applied

No undergraduate courses can be applied to this certificate program.

Maximum time for completion

All requirements for the certificate must be completed within three years. Most students enrolled in this program will be part-time students, employed full time. Thus two years may be needed for the completion of all courses if students take one course per semester.

Number of credit hours taken prior to admission to the certificate program that may be counted to completion of the degree

Up to 6 equivalent credit hours taken prior to admission to the certificate program, including 3 hours taken from another institution, will be counted towards the certificate. The rest of the courses must be completed at IUPUI within a three-year period from the time of admission.

Course lists for the program including course descriptions

Human Computer Interaction Design I **I541** **(3 Credits)**
This course covers human-computer interaction theory and application from an integrated-approach of knowledge domains, i.e., the cognitive, behavioral, and social aspects of users and user context, relevant to the design and usability testing of interactive systems.

Human Computer Interaction Design 2 **I561** **(3 Credits)**
As a continuation of HCI 1, this course introduces students to advanced HCI theories and practices. Areas of study include: product design research methods and issues underlying design thinking, advanced usability practices, and other human-system interaction models. Thesis research planning, methods, and data analysis will also be covered.

Psychology of Human-Computer Interaction **I563** **(3 Credits)**
Covers the psychological and behavioral science of human-computer interaction, including cognitive architecture, memory, problem-solving, mental models, perception, action, and language, Emphasis is placed on developing an understanding the interaction between human and machine systems and how these processes impact the design and testing of interactive technologies.

Prototyping for Interactive Systems **I564** **(3 Credits)**
The course covers methodologies for designing and prototyping graphic user interfaces, including rapid (paper) and dynamic (interactive) prototypes. Principles of design research and visual communication are discussed in the context of interaction design, cognition and user behavior, as well as usability testing techniques for concept validation.

Usability and Evaluative Methods in Interactive Design **I543** **(3 Credits)**
Web usability principles (theory) and practices are covered with a semester long project that draws upon relationships between Web interface design and usability engineering. Students learn a collection of requirements process and testing techniques.

Program Administration

A committee comprised of Drs. Faiola, MacDorman, and Palakal will jointly oversee the program. All advising will be done by these faculty members. The Office of the Assistant Dean, Mark Mccreary, the School of Informatics, IUPUI, will take responsibility for all record keeping and tracking of students.

Procedures for program evaluation including the criteria for success

Upon completion of the HCI certificate program, exit interviews will be conducted for all students to determine the effectiveness of the program in meeting their needs and to identify how they are using the skills and tools learned in the program in their professions. Follow-up interviews will be conducted after three and five years. Given the projected enrollment of this program, and the fact that many of the graduates will remain employed locally, it is anticipated that most students will be tracked this way.

Success of the program will be defined in terms of demand (enrollment) and the responses of the students surveyed upon completion of their degree and in the follow-up interviews.

Notes

1 ACM delivers resources that advance computing as a science and a profession. ACM provides the computing field's premier Digital Library and serves its members and the computing profession with leading-edge publications, conferences, and career resources. See http://www.acm.org/ and Appendix A.
2 ACM SIGCHI, the ACM's Special Interest Group on Computer-Human Interaction, brings together people working on the design, evaluation, implementation, and study of interactive computing systems for human use. ACM SIGCHI provides an international, interdisciplinary forum for the exchange of ideas about the field of human-computer interaction (HCI). See http://sigchi.org/ and Appendix B.

APPENDIX A

- **Membership**
  Professionals
  Students

  Advanced Member Grades
  Need to Renew?
- **Portal**

  The Digital Library
  The Guide to Computing Literature
- **Publications**
  Queue: Latest computing trends
  Ubiquity: IT opinion magazine and forum
  TechNews: News Gathering Service for IT Professionals
  eLearn: Distance learning magazine
  MemberNet: Your Key to the World of ACM...and Beyond
  Computers in Entertainment: New ACM online magazine
- **Special Interest Groups (SIGS)**
- **Professional Development Centre**
- **Conferences**
- **Institutions and Libraries**
- **Education**
- **Chapters**
- **Career Resource Centre**
- **Public Policy**
  USACM: ACM's U.S. public

Association for Computing Machinery

ACM delivers resources that advance computing as a science and a profession. ACM provides the computing field's premier Digital Library and serves its members and the computing profession with leading-edge publications, conferences, and career resources.

What's New

Open Volunteer Position: Editor-in-Chief for ACM interactions magazine

ACM announces Senior Members

ACM Names Distinguished Engineers, Scientists, and Members for Contributions to Computing [press release]

USACM members Barbara Simons and Edward Felten testify before U.S. Congress on Electronic Voting Machines. Read Press Release

Bernard A. Galler, ACM president from 1968-1970, passed away on September 4, 2006.

USACM releases privacy policy recommendations to address collection, storage and use of personal information.

ACM 2006 General Election Results

Participate in ACM's 2006/2007 Member-Get-A-Member Drive!

ACM Job Migration Task Force Releases Report on the Globalization and Offshoring of Software [press release] [news coverage]

USACM Study Group Issues Voter Registration Guidelines to Assure Privacy, Accuracy [press release]

ACM President Says White House Commitment to Increase Education, R&D Investment Reflects Tech Community Priorities
ACM Names 2005 Fellows

ACM Queuecasts, discussions with technology experts, are now available to download to your computer or MP3 player.

Purchase
Books
Proceedings
Manage/Create your acm.org web account

Access your Message Center

Explore
Online Books
Online Courses

Check System Availability
Mail Alerts
View
Conference Calendar
[**Search it!**]

New:
Local Activities Calendar

Career Opportunities
Employers
Job Seekers

Advertising rates and information

Compete
The ACM International Collegiate Programming Contest sponsored by IBM

The ACM Student

policy office Committee on Women in Computing
The Coalition to Diversify Computing

ACM Plagiarism Policy Adopted

ACM in the News and Press Releases

Research Competition sponsored by Microsoft Research

- **Press Room**
- **Awards**

Advanced Member Grades

- **About ACM**
- **Contact Information**

ACM – Association for Computing Machinery
2 Penn Plaza, Suite 701, New York, NY 10121-0701
1-800-342-6626 (USA and Canada) or +212-626-0500 (Global) webmaster@acm.org
USACM – U.S. Public Policy Committee of ACM
1100 Seventeenth Street, NW Suite 507 Washington, DC 20036-4632
+1-202-659-9711

APPENDIX B

interactions
Bulletin
TOCHI
CHI Letters

ACM SIGCHI, the ACM's Special Interest Group on Computer-Human Interaction, brings together people working on the design, evaluation, implementation, and study of interactive computing systems for human use. ACM SIGCHI provides an international, interdisciplinary forum for the exchange of ideas about the field of human-computer interaction (HCI).

SIGCHI News

2006-12: Congratulations to the Best of CSCW2006 award winners!. Best paper awards were given to Marcelo Cataldo, Patrick Wagstrom, James Herbsleb, and Kathleen Carley from Carnegie Mellon University for their paper on "Identification of Coordination Requirements: Implications for the Design of Collaboration and Awareness Tools"; and Shilad Sen, Shyong K. Lam, Al Manunur Rashid, Dan Cosley, Dan Frankowski, Jeremy Osterhouse, F. Maxwell Harper, and John Riedl from the University of Minnesota for their paper on "Tagging, communities, vocabulary, evolution". Best note award was given to David Fono from the University of Toronto and Scott Counts with Microsoft Research for their note on "Sandboxes: Supporting Social Play through Collaborative Multimedia Composition on Mobile Phones".

2006-03: SIGCHI congratulates this year's award winners. Lifetime Achievement Award Winners: Judith Olson and Gary Olson; CHI Academy Inductees: Michel Beaudouin-Lafon, Scott Hudson, Hiroshi Ishii, Jakob Nielsen, Peter Pirolli, and George Robertson; Lifetime Service Award: Susan Dray; SIGCHI Social Impact Award: Ted Henter.

SIGCHI congratulates Don Norman, a longtime member of our community, member of the CHI Academy, and SIGCHI Lifetime Achievement Award winner, has been awarded the 2006 Benjamin Franklin Medal in Computer and Cognitive Science for his work on "the development of the field of user-centered design, which utilizes our understanding of how people think to develop technologies designed to be easily usable."

2005-08: The SIGCHI organizational bylaws have been updated. These bylaws were

approved some time ago, and the Web site is just now catching up.

Join Now! The benefits of SIGCHI membership are:

- Discounts on sponsored conferences
- Access to quality SIGCHI content through The ACM Digital Library (DL)
  Members have access to SIGCHI-sponsored content in the DL. Full access requires a separate subscription.
- Free subscription to interactions magazine (6 issues/year)
- Membership networking

General Information

- More About SIGCHI (2006-08-29)
- Membership (2005-09-12)
- Involvement (2004-02-27)
- Documents, Policies, Procedures (2006-08-29)
- SIGCHI Awards (2006-11-16)

SIGCHI People

- Officers & Committees (2006-12-20)
- Mailing Lists (2006-09-21)
- Local SIGs (2006-09-21)
- Photo History of SIGCHI

HCI Information

- Conferences [including CHI 2007]
- Publications [CHI Letters, ...]

Special Interest Areas

- Accessibility
- Education [Curricula for HCI]
- Intercultural Issues
- Kids and Computers
- US Public Policy
- World Wide Web

Other HCI Resources

- HCI-Sites
- HCI Bibliography

Send comments on http://sigchi.org/ to the SIGCHI Information Director, Scooter Morris, at

infodir_sigchi@acm.org

APPENDIX C

PROGRAMS HCI educational programs (e.g., BS, MS, PhD) on HCI.

http://www.hcibib.org/education/#PROGRAMS

1. **University of Washington, Technical Communication**
2. **University of Queensland**
   Australia, Queensland, Brisbane *ARC Key Centre for Human Factors and Applied Cognitive Psychology* Penelope Sanderson psanderson@humanfactors.uq.edu.au
   Research degrees in human factors, HCI, and cognitive engineering; postgraduate degrees in human factors
3. **Melbourne, University of**
   Australia, Victoria *PhD Human Computer Interaction* Steve Howard s.howard@dis.unimelb.edu.au
4. **Swinburne University of Technology**
   Australia, Victoria *Swinburne University of Technology - HCI Masters and PhD)*
   Master of Information Technology and PhD in Cognitive Engineering
5. **Graz University of Technology**
   Austria, Graz *Human-Computer Interaction* Keith Andrews kandrews@iicm.edu
6. **Calgary, University of**
   Canada, Alberta, Calgary *Computer Science (Human Computer Interaction)* Saul Greenberg saul@cpsc.ucalgary.ca
7. **Simon Fraser University**
   Canada, British Columbia, Surrey *SFU School of Interactive Arts and Technology* Brian Fisher bfisher@sfu.ca
   Masters and Ph.D programs in HCI and interaction design with an emphasis on interdisciplinarity, design, and new interactive technologies
8. **University of British Columbia**
   Canada, British Columbia, Vancouver *HCI@UBC - University of British Columbia HCI programs* Brian Fisher fisher@cs.ubc.ca
9. **Carleton University**
   Canada, Ontario, Ottawa *Human Oriented Technology Lab (HOT Lab)* Richard F. Dillon ddillon@ccs.carleton.ca
   The HOT Lab is a university-based centre for research, education, and consulting that strives to improve interactive technologies for human endeavors with an emphasis on human computer interaction and a user-centred design approach.
10. **University of Waterloo**
    Canada, Ontario, Waterloo *HCI at the University of Waterloo* hci@cs.uwaterloo.ca
11. **Sino-European Usability Center, Dalian Maritime University**
    China, Dalian *Sino-European Usability Center* Zhengjie Liu liuzhj@dlmu.edu.cn
    Founded in 2000, Sino-European Usability Center is an usability/HCI research lab and consultancy in China with a team of around 40. It works on projects sponsored by international companies and public funds. It offers Master and PhD programs in HCI.
12. **University of Southern Denmark**
    Denmark, Sonderborg *IT Product Design* Jacob Buur buur@mci.sdu.dk
    2-year graduate course on user centred interaction design: A new breed of designers, who specialize in creating the intelligent products of the future.
13. **University of Southern Denmark**
    Denmark, Sonderborg *IT Product Development* sjogreen@mci.sdu.dk
    User Centred Interaction Design The Mads Clausen Institute for Product Innovation in Sonderborg presents a new two-year graduate course in 'IT Product Development'.
14. **ADVISES network (various participating institutions across europe)**
    Europe *Analysis Design and Validation of Interactive Safety-critical and Error-tolerant Systems* Bastiaan Schupp bastiaan.schupp@cs.york.ac.uk
    ADVISES is an European Research Training Network for PhD's and Post-Doc's focussing at interaction in safety

critical systems

15. **University of Tampere**
    Finland, Tampere *Tampere, University of* Kari-Jouko Raiha kjr@cs.uta.fi
    Computer Science (Human-Computer Interaction)
16. **Oldenburg, University of, Informatics Department**
    Germany, D-26111 Oldenburg *Software-Ergonomie* Peter Gorny gorny@uni-oldenburg.de
17. **FORTH-ICS**
    Greece, Crete *EDeAN - European Design for All e-Accessibility Network* Iosif Klironomos iosif@ics.forth.gr
    Established by the European Commission in 2002, EDeAN is charged with fostering awareness on Design for All and eAccessibility and promoting changes of culture in the public and private sectors. It aims to establish links with appropriate education channels to embed Design for All best practices in new curricula.
18. **Interaction Design Institute Ivrea**
    Italy, Ivrea *Interaction Design Institute Ivrea* Gillian Crampton Smith info@interaction-ivrea.it
    An institute that combines research, design, and business. Its fundamental aim is to develop new service concepts, new skills, new people to design them.
19. **Eindhoven University of Technology, Faculty Technology Management**
    Netherlands, Eindhoven *Masters Program for User-System Interaction* Matthias Rauterberg secretariaat.usi@tue.nl
    A two year post-graduate program resulting in a Masters of Technological Design (MTD)
20. **Utrecht School of the Arts**
    Netherlands, Utrecht, Hilversum *Interaction Design at the Utrecht School of the Arts* Hans Wolters hans.wolters@kmt.hku.nl
    The "Hogeschool voor de Kunsten Utrecht" (Utrecht School of the Arts, Utrecht, The Netherlands) offers a four-year curriculum in interaction design and a one year master of arts degree in interactive multimedia.
21. **Depts of Mechanical Engineering/ Computer Science, Linkoping University**
    Sweden *HMI Graduate School* Kjell Ohlsson kjeoh@ikp.liu.se
    HMI Graduate School embraces about 65 graduate students and 30 faculty members in Linkoping and Stockholm
22. **Umea Institute of Design, Umea University**
    Sweden, Umea *Umea Institute of Design* Mike Stott mike.stott@dh.umu.se
    Our Interaction Design programme, started in 1996, deals with the relation between people and information technology with particular focus on the interaction between product and user. We see the discipline of Interaction Design as the ability to design both the cognitive and physical interface and integrate them into a successful whole. Our aim is to enable designers to create understandable and pleasurable information-based products, services and environments.
23. **University of Bath**
    United Kingdom, England, Somerset, Bath *MSc Human Communication and Computing* Leon Watts pg@cs.bath.ac.uk
    Combination of Psychology and Computer Science in an interdisciplinary graduate programme that combines theory and practical techniques for researching, designing and evaluating interactive systems for individuals and for groups.
24. **Lancaster University**
    United Kingdom, Lancashire, Lancaster *Masters by Research in Design and Evaluation of Advanced Interactive Systems* Linden Ball l.ball@lancaster.ac.uk
    HCI research-based masters course focussing on the interface between psychology and computing; skills include task analysis, UML, usability testing, user modeling, ethnography, protocol analysis; domains include multimedia & distributed systems, WWW (including XML), ubicomp, mobile and wearable technologies.
25. **De Montfort University**
    United Kingdom, Leicester *MSc in Human-Computer Systems* Mike Callaghan jmc@dmu.ac.uk
26. **Kingston University**
    United Kingdom, London *MRes Usability Engineering* Martin Colbert m.colbert@kingston.ac.uk
    This Masters by Research and Dissertation is one year of supervised research activity. Having established some fundamentals, students use a range of analytic and data gathering techniques to prepare and conduct different kinds of empirical, usability studies. These studies address usability issues of the students' choice.
27. **London Guildhall University**
    United Kingdom, London *MSc IT Usability* Robert Scane scane@lgu.ac.uk
    1 year F/T (can also be taken P/T), 9 taught units followed by individual project.
28. **Middlesex University: Lansdown Centre for Electronic Arts**
    United Kingdom, London *MA/MSc Design for Interactive Media* Stephen Boyd Davis s.boyd-davis@mdx.ac.uk

Since its inception in 1993, the programme has developed a radical questioning approach to interaction design. The programme is structured and intensively taught, while at the same time being informal and project-based. Students are encouraged to be both realistic and experimental, working both individually and in small teams.

29. **UCL**
    United Kingdom, London *University College London Interaction Centre* Ann Blandford a.blandford@ucl.ac.uk
    Human Computer Interaction combines the interests and excitements of both psychology and computer science, and combines them with practical design and the opportunity to make the world a better place for people. This course gives participants theoretical underpinnings and practical experience of HCI.
30. **University College London (UCL)**
    United Kingdom, London *UCL Interaction Centre (UCLIC)* Ann Blandford A.Blandford@ucl.ac.uk
    Research, teaching and consultancy in HCI, including an advanced Masters in HCI.
31. **Dundee, University of**
    United Kingdom, Scotland *M.Sc. (Conversion) / B.Sc. Honours Applied Computing* Louisa Cross lcross@computing.dundee.ac.uk
32. **University of Dundee**
    United Kingdom, Scotland, Dundee *BSc (Hons) Interactive Media Design* Chris Hand http://www.idl.dundee.ac.uk/~chris/
    4-year Batchelor's degree in Interactive Media Design, specialising in Physical Computing and Interactive Narrative/ Entertainment design. Prospectus entry at http://www.dundee.ac.uk/prospectus/undergrad/courses/mediades.htm
33. **Heriot-Watt University, Computing and Electrical Engineering**
    United Kingdom, Scotland, Edinburgh *MSc HCI (Advanced), MSc IT(HCI) (Conversion), PhD* Patrik O'Brian Holt ph@cee.hw.ac.uk
34. **University of California, San Diego**
    United States, California, La Jolla *Department of Cognitive Science* Jim Hollan hollan@cogsci.ucsd.edu
35. **Stanford University**
    United States, California, Stanford *Human-Computer Interaction Design* Terry Winograd winograd@cs.stanford.edu
36. **University of California at Berkeley**
    United States, Carlifornia, Berkeley *Information Managment and Systems* info@sims.berkeley.edu
    Major areas of study include information organization and retrieval, human-computer interaction and usability, design and implementation of information systems, and information policy and management.
37. **University of Colorado**
    United States, Colorado, Boulder *University of Colorado, Boulder* Clayton Lewis
38. **Nova Southeastern University, School of Computer and Information Sciences**
    United States, Florida, Fort Lauderdale *Information Systems; Computer Science; Computing Technology in Education* Laurie Dringus laurie@scis.nova.edu
39. **Georgia Institute of Technology, GVU**
    United States, Georgia, Atlanta *Human Computer Interaction (M. S. Degree)* Joan Morton hci-ms@gvu.gatech.edu
40. **Columbia College Chicago**
    United States, Illinois, Chicago *Columbia College Chicago - Interactive Multimedia* Wade Roberts jbutler@interactive.colum.edu
    Innovative interdisciplinary curriculum leading to a B.A., focusing on interactive content and interactive interfaces, with an emphasis on teamwork and collaboration. Concentrations include Graphic Design, Animation, Programming, Video, Sound Technology/Design, Management, Photography, Writing, Marketing/Market Research, and Interactive Product Design.
41. **DePaul University**
    United States, Illinois, Chicago *DePaul University, School of Computer Science, Telecommunications and Information (CTI)* Craig Miller cmiller@cs.depaul.edu
    Bachelor of Science in Human-Computer Interaction; Masters of Science in Human-Computer Interaction
42. **Indiana University**
    United States, Indiana, Bloomington *Masters of Science in HCI* Marty Siegel msiegel@indiana.edu
    Masters degree in HCI offered through the School of Informatics at IU.
43. **School of Informatics, Indiana University - Purdue Univerity Indianapolis (IUPUI)**
    United States, Indiana, Indianapolis *HCI Grad Program at Indiana University - Purdue University Indianapolis (IUPUI)* afaiola@iupui.edu
44. **Purdue University, Psychology**

United States, Indiana, West Lafayette *Human Factors (PhD, MS)* Gavriel Salvendy salvendy@ecn.purdue.edu

45. **Iowa State University**
    United States, Iowa, Ames *Human Computer Interaction Interdisciplinary Graduate Program* James Oliver info@hci.iastate.edu
    ISU is making a strategic investment to accelerate research, attract students and faculty members and establish a graduate program in this vital area of study.
46. **Maharishi University of Management**
    United States, Iowa, Fairfield *Human-Computer Interface Masters Co-op program* Frederick Travis ftravis@mum.edu
    One year graduate HCID courses with one year curriculum practical training. Co-op program with area HCI companies
47. **UMBC: Information Systems Department**
    United States, Maryland, Baltimore *UMBC Information Systems* Andrew Sears asears@umbc.edu
48. **University of Baltimore**
    United States, Maryland, Baltimore *University of Baltimore Information Arts & Technologies* Nancy Kaplan nkaplan@ubalt.edu
    The school of Information Arts & Technologies offers Graduate Certificates in Information Design, a Master's of Science in Interaction Design and Information Architecture, and a Doctoral of Communication Design.
49. **Maryland at College Park, University of**
    United States, Maryland, College Park *Human-Computer Interaction (HCIL)* Ben Shneiderman hcil-info@cs.umd.edu
50. **MIT Media Lab**
    United States, Massachusetts, Cambridge *Media Arts and Sciences*
51. **University of Massachusetts Lowell**
    United States, Massachusetts, Lowell *HCI Graduate Certificate Program* Marian Williams williams@cs.uml.edu
52. **Tufts University**
    United States, Massachusetts, Medford (Boston) *Computer Science* Robert Jacob jacob@eecs.tufts.edu
53. **Bentley College**
    United States, Massachusetts, Waltham *Human Factors in Information Design* William M. Gribbons wgribbons@bentley.edu
    Outlines the MS program in Human Factors in Information Design
54. **Michigan, University of, School of Information**
    United States, Michigan, Ann Arbor *Human Computer Interaction (Masters)* Judy Olson jsolson@umich.edu
    A new two year program in HCI in the context of a broad Masters of Science in Information (MSI) that includes computer science, information science, and economics as well as relevant social science.
55. **Minneapolis College of Art and Design**
    United States, Minnesota, Minneapolis *MCAD BS: Visualization* Michelle Ollie michelle_ollie@mcad.edu
    MCAD's BS:Visualization degree is a unique multi-disciplinary program in communications, planning, and design.
56. **Nebraska at Omaha, University of**
    United States, Nebraska, Omaha, 68182 *Human-Computer Interaction* Philip Craiger pcraiger@unomail.unomaha.edu
57. **Cornell University**
    United States, New York, Ithaca *Cornell Human Computer Interaction Lab* Geri Gay gkg1@cornell.edu
58. **Oswego State University of NY**
    United States, New York, Oswego *Human Computer Interaction M.A. Program* Gary Klatsky klatsky@oswego.edu
    Interdisciplinary M.A. program in HCI integrating psychology, computer science and graphic design
59. **Rensselaer Polytechnic Institute**
    United States, New York, Troy/Albany *Cognitive Engineering* Wayne D. Gray grayw@rpi.edu
    Doctoral program (Fall 2003) emphasizing integrated cognitive systems, computational cognitive modeling, and cognitive engineering. Support available.
60. **North Carolina at Chapel Hill, University of**
    United States, North Carolina, Chapel Hill *Information and Library Science* Barbara M. Wildemuth wildem@ils.unc.edu
61. **Kent State University**
    United States, Ohio, Kent *Information Architecture & Knowledge Management* Thomas J. Froehlich iakm@kent.edu

The Master of Science is offered in three Concentrations: * Information Architecture * Information Use * Knowledge Management

62. **Oregon, University of, Computer & Information Science Dept.**
    United States, Oregon, Eugene *Human-Computer Interaction (MS,PhD)* Sarah Douglas douglas@cs.uoregon.edu
    Computer science graduate program.
63. **Drexel University**
    United States, Pennsylvania, Philadelphia *Drexel University, College of Information Science and Technology (PhD)* Scott Robertson scott.robertson@drexel.edu
64. **Carnegie Mellon University**
    United States, Pennsylvania, Pittsburgh *Human-Computer Interaction (Masters)* Bonnie E. John HCII-masters@cs.cmu.edu
    A research-oriented interdisciplinary degree program in Human-Computer Interaction, leading to a PhD in HCI.
65. **Rice University**
    United States, Texas, Houston *Rice University Ph.D in Human-Computer Interaction*
66. **Virginia Tech**
    United States, Virginia, Blacksburg *Center for Human-Computer Interaction (CHCI)* John M. Carroll
67. **University of Virginia**
    United States, Virginia, Charlottesville *Human-Computer Interaction* Stephanie Guerlain guerlain@virginia.edu
    Undergraduate and Graduate program in human-computer interaction and/or cognitive engineering. Research in decision support in medical and military applications. Cognitive engineering research in medical, military, transportation and process control. Eye-gaze technology for usability testing and the disabled.
68. **George Mason University**
    United States, Virginia, Fairfax *Human Factors and Applied Cognition* Deborah Boehm-Davis gray@gmu.edu
69. **Washington, University of, Computer Science & Engineering**
    United States, Washington, Seattle *Constraint-based Systems* Alan Borning borning@cs.washington.edu

APPENDIX D

Human-Computer Interaction

Human Computer Interaction (HCI) is the branch of informatics that studies and supports the design, development and implementation of humanly usable and socially acceptable information technologies. More

Master of Science in Human-Computer Interaction

The graduate degree in HCI is a 36-credit program, and works with a range of schools on the IUPUI campus. It gives students the ability to design, develop, research, and evaluate how people use today's computers – and tomorrow's. This includes integrated knowledge of many fields, including: design, psychology, engineering, business, ethics, and technology.

- **Preparing for Study**
- **Degree Requirements**
  Courses needed to achieve degree: electives, core courses

Contact Information

For more information on the HCI program at IUPUI, contact Anthony Faiola.

M.S. in Human-Computer Interaction

Preparing for Study

Back to **Human-Computer Interaction**

Students applying for the HCI Graduate Program should have a foundation of core knowledge and skills in one or more of the following proficiency areas. These are usually obtained through undergraduate or graduate level courses previously taken by the applicant or from his/her work experience.

1 **Programming**

Proficiency in programming/scripting is a core knowledge component, including:

- One or more languages, such as HTML, JAVA, C++, and Visual Basic.
- A basic understanding of programming methodologies, such as system design and architecture, problem and algorithm analysis.
- Other systems knowledge such as artificial intelligence and database analysis / database technology.

2 **Design**

The second proficiency area includes familiarity with the principles and processes of visual communication, industrial design, new media, or other disciplines that deal with design theory and practice. A competent background in this area would include core knowledge of:

- General Theoretical Areas:
- Knowledge and application of three-dimensional animation and/or modeling tools.
- Design methodologies for two and/or three dimensional product development.
- Conceptual modeling, prototyping, and product delivery.
- Problem-solving methodologies and critical thinking
- Specific Skill-Sets:
- Fundamental concepts of visual communication, e.g., page design, and layout.
- Industrial design basics, fundamental concepts of 3D product design.
- Design principles, typography, and color theory.
- Knowledge and application of a range of digital (vector and raster) authoring

tools for Web or interface design.

3 **Social Sciences**
The current trend of HCI is clearly moving toward a pedagogical model that embraces a contextual understanding of human behavior and cognition in interaction with computing. This interaction includes a broad range of processes that must be studied from the perspective of the social sciences. Students entering the HCI Graduate Program with this core knowledge would include course work in the areas of:

- Psychology: general, cognitive, and behavioral
- Sociology and anthropology (ethnography)
- Cross-cultural psychology and communication.
- Information management and/or Information and library science

4 **Diverse Disciplines**
There is a broad range of diverse disciplines that could also provide an applicant the necessary knowledge and expertise for success in the HCI graduate program. This, of course, also depends upon the focus and determination of an applicant to build on prior skill-sets. These diverse disciplines could include backgrounds in cultural studies, communication, architecture, business, education, engineering, computer science, information technology, library science, etc. Depending on each applicant's background, the modeling of a special plan of study will be necessary and reviewed on a case-by-case basis.

M.S. in Human-Computer Interaction

Degree Requirements

Back to **Human-Computer Interaction**

Core (15 cr.)

INFO I560 HCI Design 1 (3 cr.)
INFO I561 HCI Design 2 (3 cr.)
INFO I543 Usability and Evaluative Methods (3 cr.)
INFO I575 Informatics Research Design (3 cr.)
INFO I563 Psychology of HCI (3 cr.)

Electives (15 cr.)

Informatics / New Media

INFO I501 Introduction to Informatics (3 cr.)
INFO I502 Information Management (3 cr.)
INFO I503 Social Impact of Information Technologies (3 cr.)
INFO I505 Informatics Project Management (3 cr.)
INFO I534 Seminar in Human Computer Interaction (1-3 cr.)
INFO I550 Legal and Business Issues in Informatics (3 cr.)
INFO I554 Independent Study in Human Computer Interaction (1-3 cr.)
INFO I564 Prototyping for Interactive Systems (3 cr.)
INFO I590 Topics in Informatics (3 cr.)
NEWM N503 Digital Media Application Design Processes (3 cr.)
NEWM N510 Web-Database Concepts (3 cr.)
NEWM N501 Foundations of Digital Arts Production (3 cr.)
NEWM N504 Advanced Interactive Design Applications (3 cr.)

Library & Information Science

SLIS L505 Organization and Representation of Knowledge & Information (3 cr.)
SLIS L509 Introduction to Research and Statistics (3 cr.)
SLIS L545 Systems Analysis and Design (3 cr.)
SLIS L546 User-centered Database Design (3 cr.)

SLIS L571 Information Architecture for the Web (3 cr.)
SLIS L625 Information in the Social Sciences (3 cr.)

Social Sciences

PSY I643 Field Methods and Experiments (3 cr.)
SOC S551 Sociological Research Methods (3 cr.)
SOC S659 Qualitative Methods in Sociology (3 cr.)
ANTH E404 Field Methods in Ethnography (3 cr.)
X000 Courses from the social sciences: psychology, sociology, anthropology (3 cr.)

Computer Science

CSCI 507 Object-Oriented Design and Programming (3 cr.)
CSCI 550 Computer Graphics (3 cr.)
CSCI 552 Advanced Graphics and Visualization (3 cr.)

Project/Thesis (6 cr.)

INFO I694 Thesis/Project in Human Computer Interaction (1-6 cr.)