

HUMAN FACTORS IN INFO DESIGN (HF)

HF 590 Internship in Human Factors in Information Design (1 credit)

A one-credit field-based educational experience for HFID students, with the opportunity to (1) observe human factors and user experience practices, (2) apply knowledge of human factors and user experience research methods (3) develop project management skills, (4) and explore development cultures. This internship option is available to HFID graduate students. Students must work a minimum of 120 hours at an approved organization, complete a reflection paper, and coordinate their performance appraisal with a specified site supervisor. A student is limited to doing one such one-credit internship before degree completion. *Typically Offered:* Fall and Spring

HF 700 Foundations in Human Factors (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

Designing intuitive, self-revealing products requires understanding the human factors that underlie the user's interaction with the product. This course introduces the applied theories relevant to the design of information products, training programs or user interface designs. Particularly relevant to those working with critical applications, diverse user populations and new technologies, the course helps students to create applications compatible with the strengths and weaknesses of the user's information processing systems. Students learn to anticipate user requirements before product development, to explain the user's performance during usability and prototype testing, and to foster a smooth transition for users facing new technologies or information.

Typically Offered: Fall and Spring

HF 701 Directed Study in Human Factor (3 credits)

A Directed Study is designed for highly qualified students who, under the direction of a member of the sponsoring academic department, engage in an agreed-upon in-depth independent examination, investigation or analysis of a specialized topic.

Typically Offered: As needed

HF 710 Managing the Experience Design Process (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

This course introduces frameworks, methods, and tools that experience designers can use to strategically manage and integrate user-centered design (UCD) approaches into the product development process. Through readings, discussions, workshops, individual assignments, and team projects, students critically examine how UCD is integrated into innovation and product development frameworks. Students apply selected frameworks to class projects, and examine the appropriateness of various process frameworks for particular companies, products, and industries. Depending on the nature of class projects for a given semester, student teams work together on research and design for a product, service, or environment. Course materials, activities, and guest speakers address strategies for planning UCD activities, integrating research and design into the development process, working effectively with multi-disciplinary team members, communicating with stakeholders, and evaluating project performance.

Typically Offered: Fall and Spring

HF 720 Internationalization and World-Ready Product Design (3 credits)

Pre-Req: MSHFID student, MSDI student, MSMBA student, or program director permission

In today's global marketplace, success requires a strategy for tailoring technology products to the requirements of the international community. This course introduces participants to the theory and practice of internationalizing all aspects of the user experience, including support, translation, interaction design, interface design, user research and testing. Moving beyond a narrow focus on language, this course addresses internationalization from the more comprehensive perspective of cultural psychology and cultural anthropology. The course begins by recognizing the ethnocentric biases that affect all aspects of experience design, then proposes a globalized core design for all aspects of the product line. Working from this core, experience designers can more effectively and economically tailor product design to serve the needs of a local community. The course will focus on the major markets for technology, including Japan, China, India, and Germany.

Typically Offered: Once a year

HF 725 User Experience Leadership and Management (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

In a business world where change is continuous and innovation essential, leadership and management are critical competencies that every User Experience (UX) professional must command. In this course students will learn how to lead and to manage user-centered strategies, tactics, organizations, and teams. Through case studies, visits with Silicon Valley-based UX leaders, lectures, team exercises, short papers, and hands-on assignments, students will learn how User Experience participates at a strategic level, how to communicate the value of user experience to executives, as well as how to recognize business challenges that can be turned into user experience successes. As part of this course, students will create their own personal strategic plan for use in managing their career as a user experience professional and leader.

Typically Offered: Fall and Spring

HF 730 Visualizing Information (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

This course examines the theory and practice of designing dynamic visualizations that clarify thinking, facilitate problem-solving, and foster creativity. This course helps students to harness their visual and creative potential and to display this potential in the visual medium. In practice, students will learn to make large collections of verbal and numerical data accessible through carefully crafted visual displays. The unique strengths and weaknesses of both words and visuals are analyzed. Advancing from this analysis, the course helps students design a visual-verbal system where the strengths of one medium support the weaknesses of the other. This complementary system more fully integrates visual and verbal information, thereby dramatically improving the reader's understanding and retention of the communication design.

Typically Offered: Once a year

HF 735 Design Ethics (3 credits)

This course explores the values that consciously and unconsciously underpin the design process. It explores how values shape design, how they determine the features of products and services, and how values shape the entire user experience. However, this goes beyond the user to explore how that values that drive design impact our interpersonal relations, the functioning and disfunctioning of society and the wider planetary ecology. It explores how designers incorporate knowledge of human nature into their designs, and how technology changes human nature.

Typically Offered: Fall

HF 740 Information Architecture: User-Centered Design for the World Wide Web (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

Applies human factors design principles, strategies, and best practices in creating various types of web sites. Incorporates the information and knowledge needs of users, clients, product design teams, management and other constituencies involved in creating, implementing, maintaining and using information on the World Wide Web. Topics include the user-centered design process, form and function, technology and usability issues, site types and organization, information categorization and labeling systems, global and local navigation systems, searching and browsing systems, accessibility, interactivity, page layout, template design, prototyping, modularity, scalability, maintenance and management. Students learn to identify for different audiences the value of using information architecture principles and best practices to design highly functional web sites and web applications. Includes individual and group projects.

Typically Offered: Once a year

HF 750 Testing and Assessment Programs (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

Evaluating a design solution is a critical component of experience design. In this course students are introduced to multiple methods and tools such as formative and summative testing principles, moderated and unmoderated testing, lab and remote testing, among others. You will learn to test special populations, ensure your protocol is inclusive and incorporate biofeedback as well as emotional measurements. You will learn how to address and present usability issues related to a product or system (e.g., website, software and mobile apps, interface, device). You will plan and administer tests and other means of product assessment through simulated usability problems, expert reviews, and case studies. As part of a testing team, you will also manage a real-world assessment project with one of our corporate partners.

Typically Offered: Fall and Spring

HF 751 Measuring the User Experience (3 credits)

Pre-Req or Co-Req: HF 750 and (MSHFID student, MSIT student, MSMBA student, or program director permission)

Covers more advanced assessment techniques than studied in HF750, such as usability benchmarking, competitive testing, and special studies that require advanced measurement skills. The content goes beyond usability to focus on two new overlapping areas: hedonomics and the user experience. These new areas focus less on productivity and more on the broader emotional experience with products and services. The course examines metrics suitable for assessing the contribution of the user experience to the business bottom line. The core learning activity is a field-based experience where student teams conduct research, prepare a detailed report and deliver a presentation to the sponsoring organization. In addition, influential thought leaders from the user experience community contribute to the class.

Typically Offered: Fall and Spring

HF 755 Special Topics in Human-Computer Interaction (HCI) (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

This course builds expertise for the HCI professional in a wide range of subspecialties related to human behavior and user-centered design. Three five-week modules on selected topics in HCI are taught by faculty with specialties in requirements gathering, web accessibility, interface design, inspection methods, intelligent agents, and remote usability testing. Students are graded for each module, with the three grades combined for the final class grade. Modules change each semester.

Typically Offered: As needed

HF 760 Intelligent User Interfaces (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

Intelligent user interfaces use Artificial Intelligence (AI) methods to improve user experience. The course focuses on AI methods, their applications and potential benefits, and their costs. Applications include conversational interfaces, adaptive interfaces, recommender systems, and systems dealing with imprecise and ambiguous information. To have an informed discussion, the students will also become familiar with the foundations of AI, including machine learning, neural networks, knowledge representation, decision support systems, and intelligent agents.

Typically Offered: Spring

HF 764 Immersive and Conversational Interface Design (3 credits)

Pre-Req: MSHFID Student or program director permission

This course introduces frameworks, methods, tools for designing effective immersive and conversational interfaces and experiences. Immersive interface design topics include an overview of extended reality history, concepts, technologies (e.g., augmented, mixed, and virtual reality), relevant physiological and perceptual phenomena, adverse effects, prototyping techniques, content creation tools, and design principles specific to immersive interfaces. Conversational interface design topics include an introduction to voice user interfaces and chatbots, tools for designing conversational interfaces, and combining conversational and immersive design. Lectures, case studies, readings, class discussions, and guest speakers expose students to industry trends, research findings, and best practices. Experiential and interactive workshops engage students in navigating complex design projects and leveraging industry standard design methods and tools.

Typically Offered: Once a year

HF 766 Multimodal Experience Design (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

This course is a graduate-level introduction to visual, auditory, haptic, and olfactory interfaces used in real, remote, and virtual interaction. When used appropriately, perceptual modalities can enhance interface interaction and enable users to explore and manipulate simulated and distant objects. Class topics include: human perception, auditory, haptic, and olfactory interface design, system evaluation, current applications for these modality-specific technologies and their utilization in VR and AR worlds, and multimodal integration principles (how to combine multiple senses to form a single perception). Coursework includes hands-on homework assignments, reading and discussion of research papers, a lab, and a final project. Students will be required to create an interactive prototype that leverages one or multiple sensory systems.

Typically Offered: Fall

HF 770 Prototyping and Interaction Design (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

This course introduces foundational principles and methods of prototyping and interaction design that apply to a broad range of products and interfaces. The primary goal of this course is for students to learn how interaction design principles and best practices can be effectively integrated into both static and interactive prototypes. After learning essential sketching and paper prototyping techniques, students use industry standard design methods, software, and tools to develop interactive prototypes at increasing levels of fidelity for a range of platforms and devices. Students incorporate touch, gesture, and voice into design specifications, and practice iterating on designs, presenting and justifying decisions, and addressing feedback and emerging requirements. Major course topics include sketching, paper prototyping, wireframing, interaction design, principles, patterns, heuristics, conventions, universal design, platform-specific guidelines, design systems, and style guides.

Typically Offered: Fall and Spring

HF 775 Design Innovation (3 credits)

Pre-Req: MSHFID Student or program director permission

This course introduces essential frameworks, methods, and tools for design innovation through hands-on, experiential, and interactive workshops that engage students in a real design challenge. Students develop portfolio materials including a range of essential design artifacts, and their own plan for a week-long design innovation workshop that aligns with a critical evaluation of industry trends, recently published research related to design innovation, and an organization's goals. Along the way, students learn industry standard software, and practice co-facilitating design activities. Course topics include trends in experience design practice with a focus on innovation frameworks, customer experience, service design, design thinking, systems thinking, problem definition, stakeholder theory, inclusive innovation, humane technology, sustainability, and other timely topics. Workshops, lectures, case studies, class discussions, and guest speakers expose students to a various approaches.

Typically Offered: Spring

HF 780 Qualitative Research: Theory to Practice (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

This course delves into effective qualitative research approaches for organizational success, emphasizing story-based decision-making in corporate settings. Students gain theoretical insights and practical skills to execute studies that inform product and service design. The curriculum starts with defining stakeholder objectives and progresses through qualitative research processes: defining study populations, selecting methods, preparing for data collection, analysis, and synthesis. Foundational methods like interviews, group sessions, observational studies, diary studies and surveys are covered. The course explores population diversity considerations, integration of AI and data tools, and establishing research operations. Guest speakers, workshops, and articles enrich discussions and perspectives. Upon completion, students confidently communicate and execute qualitative research strategies.

Typically Offered: Fall and Spring

HF 785 Ethnography for Experience Design (3 credits)

Pre-Req: MSHFID student, MSIT student, MSMBA student, or program director permission

Ethnographic research involves naturalistic inquiry aimed at capturing social phenomenon as they occur in a particular setting. Ethnographers can employ multiple data collection strategies to do this, but typically focus on participant/observation methodologies as a primary approach. While primarily found in social science disciplines such as anthropology and sociology, ethnographic approaches increasing are being applied in IT/IS fields for the purposes of achieving better technological designs, improving the user experience, and facilitating collaborative work. This course will introduce the student to the origins of the ethnographic method, discuss the theoretical bases of its use, identify strategies for successful ethnographic inquiry, develop initial skills for data analysis and reporting, and provide examples of how ethnographic studies of work and technological use have been used in a variety of business and organizational contexts.

Typically Offered: Spring

HF 790 Internship in Human Factors in Information Design (3 credits)

This course provides students the opportunity to integrate the classroom experience in a diverse range of field experiences in leading high-tech and web development groups. The course requires the development of an educational plan to identify the student's career goals and how those goals can be enhanced through the internship experience. The course also requires close coordination with the internship coordinator and regular meetings with the coordinator throughout the semester.

Typically Offered: Fall and Spring

HF 795 Research Methods for Human Factors (3 credits)

Pre-Req: MSHFID student, MSIT student, MS MBA student, or program director permission

This class prepares students to engage in professional and scholarly research in human factors with an emphasis on user-experience design. By critiquing research methodologies and methods from journal and practitioner publications, students will discuss the strengths and weaknesses of particular research designs. Through lectures, readings, and interactive classroom discussions of research studies, students will learn how to apply the most appropriate research methodology(s) and method(s) to a particular research problem. The course covers the full spectrum of research from basic to applied.

Typically Offered: Fall

HF 799 Experimental Course in HF (3 credits)

Pre-Req: MSHFID student, MSIT student, MS MBA student, or program director permission

Experimental courses explore curriculum development, with specific content intended for evolution into a permanent course. Students may repeat experimental courses with a different title or topic for credit.

Typically Offered: As needed

HF 800 User Experience Thesis (3 credits)

Pre-Req: HF 795 and director permission

This course is by invitation to students having shown superior knowledge, ability, and skill in their course work. Students need to take HF 700 and HF 795 in the first semester to prepare for their research project. Application for thesis option is open to full and part-time students. Students need to apply for the thesis option when they enter the MSHFID program. The candidate would be evaluated at that time to determine if they possess appropriate academic experience to pursue the thesis option. The decision regarding their admittance will be made in mid-October. Working with a Thesis Advisor, candidates will develop a research prospectus based their research interest. The prospectus will be reviewed and approved by the department research committee.

Typically Offered: As needed