



CONTENTS

NATIONAL ERGONOMICS MONTH2
ANNUAL MEETING3
PEOPLE4
SHORT COURSES4

CHAPTERS.....4
LAB REPORTS5
STUDENT VIEWS6
IN THE NEWS7
CALENDAR7

FAA Forecasts Major Progress in Aviation Human Factors R&D

By Terry Allard and James Hitt

“As the operator of the National Airspace System, the FAA has the lion’s share of work implementing NextGen. We know the direction we must take, and we’re ready to start the work.”

– Former FAA Administrator Marion Blakey, 2007

The Federal Aviation Administration (FAA) is anticipating an abundance of innovative changes for air transportation in the next 5 to 20 years. By taking a proactive approach, the FAA aims to institute new programs with minimal turbulence. To that end, the agency is leading a large-scale transformation of the civilian National Airspace System into the next-generation air transportation system (NextGen).

Human factors/ergonomics (HF/E) considerations play a major role in the NextGen challenge (Cox, 2007). The Human Factors Research & Engineering Group within the FAA’s Air Traffic Organization’s Operations Planning service unit (ATO-P) is reaching out to the HF/E community for ideas and support as we build a NextGen research and development plan for fiscal year 2009 and beyond. In this article, we describe the projected FAA aviation human factors R&D needs to support NextGen.

FAA NextGen Human Factors R&D Needs

The FAA is developing and executing R&D plans in support of a wide range of NextGen activities, with a focus on system capabilities that can be achieved between 2012 and 2018. The agency envisions midterm capabilities that are integrated with the NextGen plans of NASA and the departments of Homeland Security, Commerce, and Defense, under the auspices of the Joint Planning and Development Office (JPDO), a consortium of government agencies charged by Congress in 2003 to formulate an integrated vision and plan to double or triple capacity in the National Airspace System by 2025 while maintaining or improving current safety levels. These ambitious goals can be achieved only by transforming aviation system procedures, technologies, and operations on the ground and in the air.

The NextGen air transportation system will be highly automated and network-centric, necessitating major changes in stake-

holder roles and responsibilities. The transition from the current system will involve mixed aircraft equipage and new airspace designs that could cause confusion and increased workload if not managed properly. Highly automated systems must be designed to serve human operators, who will be called on to continue to provide resilience and creativity in the face of inevitable disruptions in system operations.

New roles and responsibilities will require novel approaches to selection, training, and decision support in order to match human capabilities with evolving aviation operations. Formal predictive methods of human-system performance need to be developed that enable the exploration of novel NextGen concepts and technologies and manage risk.

The breadth and depth of required human factors R&D cuts across all aviation operational domains, including air traffic control, flight deck (commercial and general aviation), airline operations centers, and facilities. The FAA will be exploring traditional and novel human factors approaches, including analytical and computational approaches to system safety, capacity, and efficiency. NextGen systems will require human factors R&D in many areas, including the following:

- provide specific system-engineering requirements;
- develop realistic and predictive individual and team performance models that interact with the aviation environment to improve system performance, safety, and efficiency;
- identify novel human-error types and develop human-error mitigation strategies and solutions;
- identify changes in selection criteria and training content;
- determine the appropriate level of human-automation interaction that enhances safety and efficiency while decreasing human-performance errors; and
- identify and resolve certification and flight standards issues associated with NextGen.

The FAA ATO-P Human Factors Research & Engineering Group anticipates that significant budget increases in fiscal year 2009 and beyond will solve critical human factors problems and

FAA Forecasts Major Progress...

(continued from page 1)

exploit human capabilities in NextGen. We are taking proactive steps to build the R&D infrastructure and to develop the in-house technical and management skills required to meet the NextGen challenge. We will be hiring experienced human factors researchers and research managers who are familiar with aviation operations across the board. The FAA will be seeking qualified human factors practitioners from industry, government, and academia to support their NextGen R&D needs. Significant and sustained extramural funding in aviation human factors will create the pipeline of expertise required for successful development, deployment, and operation of NextGen systems in the next decade.

The FAA will be seeking ideas and support with regard to near-term and midterm human factors issues. The HF/E community can expect a number of FAA Requests for Information and Request for Proposals to be released over the next 2 years. One topic of interest is the use of weather in aviation decision making. In the future, a common weather picture will be provided to stakeholders (air traffic controllers, traffic-flow management, pilots, and dispatchers) that will enable them to make decisions based on a common understanding of weather conditions. R&D is required to identify the current and future stakeholder information needs and to determine how weather information should be used within the decision-making process at both a tactical and a strategic level.

Human factors R&D will help to determine how NextGen concepts affect NextGen stakeholder roles and responsibilities across the National Air Space, including air traffic controllers, pilots, and dispatchers. Network-enabled operations will promote a more collaborative environment compared with today's aviation system. Cockpit displays of traffic information can increase pilot awareness of surrounding traffic both on the ground and in the air and could facilitate optimal spacing of aircraft while minimizing communication overhead with ground controllers.

Specific HF/E issues include user information and communication requirements, air-ground integration, human-automation interaction and level of automation, workload impacts, and the integration of multiple, independently developed subsystems that converge on individual human operators. Who will be responsible for aircraft separation within a particular airspace and how is that responsibility communicated to stakeholders? Changing roles and responsibilities will require novel approaches to personnel selection, training, procedures, and performance metrics.

Moving Forward

The ATO-P Human Factors Research & Engineering Group is excited about the NextGen challenges and the opportunities to help usher in a new level of aviation system services. NextGen presents a rare opportunity to make significant changes across all facets of the aviation system, including infrastructure and technologies, training and procedures, and operator roles and responsibilities. The human factors challenges are daunting, and the time for transformation is now. A strong response from the aviation human factors community will ensure that the NextGen system will be safe, efficient, and effective in satisfying the growing demand for aviation services.

References

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- Cox, V. (2007, March 22). Testimony before the House Committee on Science, Subcommittee on Space and Aeronautics on FAA's FY 2008 budget request for research and development. Article accessed at http://www.faa.gov/news/testimony/news_story.cfm?newsId=8382

Terry Allard is a member of the FAA Executive Service and leads the FAA Human Factors Research and Engineering Group in the Air Traffic Organization – Operations Planning service unit. He received a doctorate in psychology and brain science from the Massachusetts Institute of Technology and completed postdoctoral training at the University of California, San Francisco. He may be reached at terry.allard@FAA.gov.

James Hitt has more than 10 years' experience supporting government organizations in the areas of aviation human factors, air traffic operations, and security. He supports the FAA ATO – Operations Planning (ATO-P) Human Factors Research and Engineering Group in strategic planning for NextGen human factors R&D as a Unisys DOT Practice Manager. He may be reached at james.hitt@Unisys.com. ☒

NATIONAL ERGONOMICS MONTH

GSK Makes National Ergonomics Month a Priority

By Graciela Perez

Every October, National Ergonomics Month (NEM) spotlights the human factors/ergonomics profession by providing information and services designed to raise public awareness.

GlaxoSmithKline (GSK) will celebrate NEM with Health and Safety Week. The company will reach out to communities at sites around the world for educational, fun, and productive events that follow a central safety and health theme. This year's theme of Health and Safety Week is "Ergonomics: Manual Handling and Healthy Backs."

In preparation for Health and Safety Week, the company will send information to site-based health and safety managers and employee health managers to offer them ideas on activities they can use during the weeklong event. A link to the HFES NEM resources (<http://hfesnem.org>) is provided along with internal GSK



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and country-based government resources. These resources provide additional ideas for sites on a global scale. The information provided to managers is organized into four categories:

- ideas and resources for GSK Health and Safety Week events,
- specific activity ideas for events centered on the manual handling and healthy backs theme,
- high visibility of 2007 Health and Safety Week logos in various electronic formats, and
- a report of GSK Health and Safety Week 2007 activities that the corporate communications department can share with GSK employees around the world.

Injuries sustained “on the job” have long been a consideration for companies, yet injuries that occur outside the work environment also directly affect companies. In fact, recent internal studies showed that GSK has been spending the majority of its health care dollars on non-work-related injuries as compared with work related injuries and illness.

“Workers bring all their cumulative experiences to work with them every day,” said Mark Cunningham-Hill, head of global operations for employee health management at GSK. “If a family

member is injured,” he added, “that also affects the worker’s ability to be present at work.”

GSK applies this philosophy to ergonomics resources it makes available to employees: The company provides information on topics such as how to select cars that fit the driver, how to adjust head rests in cars, ergonomics and gardening, ergonomics for school-aged children, ergonomics for musicians, and how to set up home offices.

GSK employees have embraced Health and Safety Week, requesting information on ergonomics-related issues such as bicycle design/fit and family computer work areas at home.

The week-long event is sure to provide a year of memories. GSK will create a 2008 calendar using pictures taken at related events in Africa, Australia, Romania, the United Kingdom, and the more than 110 other countries in which GSK maintains offices. This will provide a visual reminder that ergonomics is important not only during NEM but every day.

Graciela Perez, ScD. CPE is director for global human factors and ergonomics at GlaxoSmithKline (<http://www.gsk.com>), which employs more than 100,000 people in 117 countries.

**ANNUAL MEETING**

Preliminary Call for Proposals: 52nd Annual Meeting

September 22–27, 2008

New York Marriott Marquis Times Square, New York City

The Human Factors and Ergonomics Society’s Annual Meeting is the primary gathering of researchers and practitioners in the field of human factors/ergonomics (HF/E) and related areas. We invite you to submit proposals for the 52nd Annual Meeting, which will take place September 22–27, 2008, at the New York Marriott Marquis Times Square in Manhattan. New formats for presenting HF/E efforts are strongly encouraged. Participants are invited to submit proposals – including case studies, debates, demonstrations, competitive product designs, new methodologies, on-site experiments, and posters – involving both fixed and dynamic information presentation.

Key Dates

The following deadlines are tentative as of press time. A fully detailed call for proposals will be available at the HFES Web site in mid-November 2007. The deadline for submitting any type of proposal is January 28, 2008. Acceptance/rejection letters will be sent on March 21. Camera-ready versions of accepted proceedings papers will be due on May 26.

Submit a Five-Page Formatted Proposal

Rather than focus on word counts, as in past years, the Technical Program Committee is seeking five-page proposals, which must be formatted in the same two-column layout that is used for papers published in the proceedings. This aids both proposers and review-

ers: Proposers no longer have to write two distinct types of documents, and reviewers can be more confident that the proposal is an appropriate summary of what will appear in the proceedings.

Proposals for any type of submission (lecture, poster, panel, etc.) **cannot exceed five correctly formatted pages.** Formatting instructions will be available in the online Call for Proposals, along with a layout template into which text may be inserted. Again, there is no word limit for the proposals; however, the font must be easily readable, and authors must address all the points specified in the Call for Proposals.

Submitting Proposals

Detailed instructions for submitting materials will be included in the online call for proposals. All submissions will be uploaded to a Web site. (The URL will be provided in the instructions.) **You must have an e-mail address** to submit a proposal because all correspondence regarding your submission will be sent via e-mail.

A single contributor will be responsible for uploading each submission, including full-session invited symposia. In order to minimize confusion between authors, reviewers, and others, contributors to full sessions are encouraged to collect materials from all authors or symposium members and upload them to the Web site.

Papers that have been published previously or presented at another professional meeting may not be submitted. All research

and analyses described in your proposal must be complete at the time the proposal is submitted. Program chairs may reject, with or without review, papers that do not present completed work. The sole exception to this policy is for student work submitted for consideration in the Student Forum track, in which case a proposer who is a student may report on work in progress.

Note that for all accepted submissions, one of the authors must attend the meeting to present the work. All presenters are required to pay the meeting registration fee.

If you know of nonmembers who might be interested in submitting a proposal, please send their contact information to the Communications Department (lois@hfes.org, 310/394-1811), and we will invite them to submit their work.

HFES Copyright

HFES requires a transfer of copyright unless the work was performed by U.S. government employees. However, the author may reuse the material for any purpose without restriction or fee. If you have questions about the HFES copyright transfer policy, please contact the HFES Communications Department (310/394-1811, lois@hfes.org). ☒

PEOPLE

David Ansiau was part of a research team that won the 2007 Liberty Mutual Prize, which was created to promote excellence in safety and health research. He may be reached at dansiau@monaco.edu.

Keith S. Karn has joined the Information Technology Department faculty for a one-year visiting appointment at Rochester Institute of Technology. Karn was previously part of the Usability Engineering Group at Xerox Corp. He may be reached at keith.karn@rit.edu until mid-June 2008.

Larry Sager has been promoted to product manager of Aptima, Inc.'s flagship simulation product, DDD, a desktop software application for military and civilian organizations involved in planning and preparing for complex team-based missions. He may be reached at lsager@aptima.com, 202/552-6125. ☒

SHORT COURSES

NC Occupational Safety and Health Education Research Center. Contact Kathleen Buckheit, University of North Carolina, Chapel Hill, 100 Friday Center Drive, Chapel Hill, NC 27599, 888/235-3320, osherc@unc.edu, <http://www.osherc.sph.unc.edu/>.

Certified Safety Professional (CSP) Review Course, November 12–16, 2007

29th Annual Occupational Safety and Health Update Compliance and Beyond, December 6–7, 2007 ☒

Chapter Survey Provides Insight

By *Fayona Meyerovitz, Chapter Revitalization Committee*

The recently completed HFES Local Chapter Presidents' Survey revealed a wealth of information on the keys – as well as the obstacles – to chapter success. The survey explored levels of meeting attendance and factors that affect attendance levels. Survey respondents were also encouraged to provide recommendations to the committee. Below is a brief summary of the results.

Keys to Chapter Success

Accountability begins at the top: A strong executive council was cited as a major player in attracting new members and getting them involved in the chapter. Well-organized meetings that attract quality speakers have a definite positive effect. As one respondent put it, "When officers are not active, the members become less active."

It's not enough that meetings be well organized; the topics must be relevant. Nontraditional meeting activities such as roundtable discussions, usability days, tours, and meetings that focus on students were considered beneficial. In order for a regional chapter to thrive, it's also important that a sufficient number of human factors/ergonomics (HF/E) professionals live in that area. In addition, maintaining an online presence with a local chapter Web site has a noticeable impact.

Reports of meeting attendance varied from about 6 to 10 for smaller chapters and 10 to 20 for larger chapters. The Europe Chapter organizes yearly local conferences, which draw 80 to 100 members. These numbers are consistent with previous reports given by U.S. local chapters with regard to local conference attendance and represent a good yardstick for chapters to use in evaluating their meeting attendance levels. One chapter president reported that instead of holding chapter meetings, the group sponsors a variety of gatherings and local conferences.

Chapter success tends to correlate with meeting attendance in a certain region, but that is not always the case. Small meetings can be highly beneficial and should not necessarily be avoided. This depends to some extent on the purpose of the local chapter. A chapter that serves a few members by providing a close-knit professional community or that furthers professional education for members is obviously worthwhile. In addition, one respondent indicated that meeting attendance should not be an indicator of success, considering how much can be achieved online.

Challenges Faced by Chapters

A recurrent challenge is to find capable directors or leaders to take on active volunteer leadership roles in the chapter. Close behind is how to grow membership and actively involve members.

A common obstacle to chapter growth can be traced to geographic distance or a small number of HF/E people in a particular area. Mobility of membership is further hindered as an increasing number of companies shut down or downsize, or when employment opportunities in other locations result in reduced local chapter membership.

Members with diverse interests, as well as competition from

programs offered by other professional societies, are indicators that a broad focus is necessary to increase the chance for success.

The logistics of program planning, meeting locations, traffic and commute times, and parking further complicate meeting preparation. Members' busy schedules add another challenge to coordinating meeting times.

Practical matters, such as managing reasonably large sums of money or dealing with insufficient funds, also were mentioned as ongoing challenges in certain chapters.

Finally, apathy was listed as a concern.

Recommendations

Some survey respondents found it difficult to offer possible solutions to the challenges they listed. Generally, they said increasing meeting attendance would be a positive step toward alleviating many of the other challenges.

Respondents offered the following recommendations:

- Invite well-known speakers and select topics with broad appeal.
- Organize tours and special events.
- Have a focused meeting agenda with a purpose that is highly beneficial to members.
- Have an ongoing project, such as a miniconference, that keeps members involved and working toward accomplishing a goal.
- Send meeting reminders via e-mail.
- Encourage members to bring nonmembers to events.
- Advertise to other local professional groups.
- Hold joint meetings with other professional groups.
- Team with nearby HFES chapters.
- Schedule one large meeting per year.

With regard to scheduling a large meeting, one respondent noted, "We get best attendance at our annual dinner meeting for which we provide subs and drinks. This is also the meeting where we announce awards and new officers, so more people have a role."

Scheduling a variety of meetings and locations was noted as a way to increase meeting attendance. It was recommended that members be surveyed about their needs and that meetings be planned to meet those needs. Experimenting with different types of meetings was found to be helpful. Serving good food was reported to be important.

An additional predictor of meeting attendance was the quality of the chapter leadership.

Making Use of Survey Results

We congratulate chapter presidents on their successes and empathize with the challenges. We encourage chapter officers to make the best use of this information. Local chapters can encourage individual HFES members in their areas who do not attend meetings to join their committees. Bear in mind that you do not need to know a member personally to generate interest in participation. We suggest that executive boards be large so that various roles may be assigned among several members. We also recommend that the work be divided so that the workload of each member is manageable. This minimizes inconvenience – another obstacle in getting members to volunteer their time. Local chap-

ters can request contact details for all HFES members in their region and standard marketing material from HFES Member Services Director Carlos de Falla (carlos@hfes.org).

Survey results have been passed on to the Chapter Affairs Committee, which thanks the chapter presidents for their candid responses. The committee suggests that directors on a given board be tasked with planning each meeting. Directors who sign up for a given month need to make the meeting interesting, promote it, create buzz marketing, attend, and try to bring nonmembers. It is difficult for a program chair or the same group of members to continually be responsible for planning and promoting every meeting. A small group of directors who are focused on one meeting have more energy to make it exciting.

We hope local chapter members will give careful consideration to the valuable information shared by our local chapter presidents. We would like to see chapters grow in strength and support their members so that our professional communities are strong in each geographical location. For this reason, we urge you to become part of your local chapter and build your own professional communities so that you create the resources that can best serve your needs.

Fayona Meyerovitz is chair of the HFES Chapter Affairs Committee and cofounder of Select Strategy, Inc., a management consulting organization that integrates human factors with business strategies. ☒

LAB REPORTS

Occupational Ergonomics and Biomechanics Laboratory

By Robert Radwin, University of Wisconsin–Madison

The mission of the Occupational Ergonomics and Biomechanics Laboratory is to research innovative ways of measuring, quantifying, and understanding human physiological and biomechanical capacities to do productive, high-quality, and healthful work. Research in the laboratory, under the direction of Robert G. Radwin, focuses on the physiological and biomechanical aspects of work. The goal is to understand how to better design jobs, equipment, tools, products, and environments in which people play a significant role, so that human capabilities are maximized, physical stress is minimized, and workload is optimized. This includes studying ergonomics aspects of the design, selection, installation and use of manually operated equipment and products; investigating the causes and prevention of work-related musculoskeletal disorders; developing novel measurements and methods for assessing exposure to physical stress in the workplace; and quantifying functional deficits associated with musculoskeletal and neuromuscular disorders for medical surveillance, rehabilitation, and prevention.

The laboratory is fully equipped with a variety of sophisticated instruments for measuring human kinematics and kinetics, physiological functions, and biopotentials during work. These include OptoTrack 3-D motion analysis, MVTA Multimedia Video Task

Analysis, Flock of Birds, electromyography (EMG), load cells and force measurement, vibration generation and measurement, and Biodex static and dynamic strength testing equipment. The laboratory also has a dedicated GE Medical Systems-Lunar Artroskan Magnetic Resonance Imaging (MRI) extremity scanner. Occupational activities are simulated in the laboratory for conducting human factors/ergonomics and biomechanics research.

Current research topics include:

- Biomechanics of muscle and tendon disorders;
- Primary and secondary prevention of repetitive-motion injuries;
- Ergonomic design of manually operated products, hand tools, and equipment;
- Evaluation of risk for work-related musculoskeletal disorders in manual work;
- Medical surveillance for carpal tunnel syndrome and upper limb disorders; and
- Rehabilitation and evaluation of functional deficits.

Robert G. Radwin is a professor and founding chair of the Department of Biomedical Engineering at the University of Wisconsin.

MacroErgonomics Safety and Health Laboratory

By Ben-Tzion Karsh, University of Wisconsin-Madison

The MacroErgonomics Safety and Health (MESH) Lab focuses on using industrial and human factors engineering theories, design principles, and methods to improve the safety of patients and health care employees. We seek to understand how the fit or misfit of health care system components contributes to patient and clinician outcomes such as adverse drug events, medication safety protocol violations, medical errors, health information technology acceptance and use, and clinician mental workload, job satisfaction, and burnout.

To achieve our goals, we collect data from patients and clinicians in pediatric and adult hospitals and primary-care clinics. We are fortunate to have received more than \$2.5 million in funding from organizations such as the Agency for Healthcare Research and Quality, the National Library of Medicine at the National Institutes of Health, the Robert Wood Johnson Foundation, the United Kingdom Department of Health, the Medical College of Wisconsin, the Wisconsin Academy of Family Physicians, and the University of Wisconsin Graduate School.

Current projects include the following:

- studying the nature and consequences of interruptions, and examining nurse strategies for interruption and error management in adult and pediatric intensive-care units;
- analyzing how technologies for bar-coded medication administration affect medication errors, workflow, and working conditions in pediatric hospitals; and
- studying physicians, nurses, pharmacists, and information tech-

nology specialists in hospitals to determine predictors of health information technology acceptance and rejection.

The MESH Lab and its director, Ben-Tzion Karsh, are actively involved in the UW-Madison Systems Engineering Initiative in Patient Safety (<http://www2.fpm.wisc.edu/seips/index.htm>). ☒

STUDENT VIEWS

Purdue Students Win NASA Paper Competition

Eight Purdue University industrial engineering graduate students recently won first place in the 2007 NASA Exploration Systems Mission Directorate Space Grant Systems Engineering Paper Competition for their paper, “iPhone in NASA Ground Operations.”

The graduate students – Ashley Benedict, Keena Byrd, Lalaine Ignacio, Amit Lagu, Ralph Palmer III, April Savoy, Deepti Surabattula, and Samantha Vaitkunas – were enrolled in a class taught by HFES member Barrett S. Caldwell. Their paper focused on improving communication among technicians during ground operations of the Crew Exploration Vehicles, which will be assembled in the Vehicle Assembly Building at Kennedy Space Center in Florida.

The students received a cash award of \$2,500 and will be VIP guests for an upcoming shuttle launch at the Kennedy Space Center in Cape Canaveral, Florida.



Back row (L-R): April Savoy, Ashley Benedict, Lalaine Ignacio, Samantha Vaitkunas, Deepti Surabattula, Keena Byrd. Front row (L-R): Amit Lagu, Barrett S. Caldwell, Ralph Palmer III.

FAA Runway Safety Competition

Following its success in 2006, the Federal Aviation Association (FAA) Design Competition for Universities will be offered for the 2007–2008 academic year. The challenges (Airport Operations and Maintenance, Runway Safety/Runway Incursions, and Environmental Interaction of Airports) of the inaugural contest remain the same, but participants will have access to additional resources, and the guidelines vary slightly.

The deadline for submissions is **April 18, 2008**. Guidelines for the 2007–2008 competition are posted at http://www.faa.gov/runwaysafety/design_competition.htm. ☒

IN THE NEWS

Research conducted by **Zhonghai Li** on emergency braking and rear-end collisions recently appeared on The Discovery Channel and in various international publications. Li's study showed that rear-end collisions decreased when the leading vehicle's brake lights increased in size during emergency braking.

Najmedin Meshkati was a featured interview in the July 14, 2007, issue of *New Scientist*. His research on Iran's nuclear facilities was discussed.

Gerald P. Krueger was quoted in a recent U.S. Transportation Research Board study on health risks and the truck-driving profession. In the article, Krueger calls on the industry to foster better health among employees. ☒

CALENDAR

Announcement deadlines: First day of the month prior to the desired issue; for events or deadlines within the first three weeks of a month, send information at least two months in advance. Items are published according to space availability. The full Event Calendar is available at <http://hfes.org>.

★ **Agriculture Ergonomics Development Conference**, November 25–29, 2007, at the Hotel Istana, Kuala Lumpur, Malaysia. International Ergonomics Association and International Commission on Occupational Health, <http://www.aedec2007.org>.

★ **Work, Stress, and Health 2008: Healthy and Safe Work Through Research, Practice, and Partnerships**, March 6–8, 2008, Omni Shoreham Hotel, Washington, D.C. American Psychological Association, the National Institute for Occupational Safety and Health, and the Society for Occupational Health Psychology, <http://www.apa.org/pi/work/wsh.html>.

★ **Third IASTED International Conference on Human-Computer Interaction**, March 17–19, 2008, Innsbruck, Austria. The International Association of Science and Technology for Development (IASTED), <http://www.iasted.org/conferences/home-611.html>.

★ **The Ergonomics Society Annual Conference**, April 1–3, 2008, University of Nottingham, United Kingdom. Sue Hull, Conference Manager, s.hull@ergonomics.org.uk, <http://www.ergonomics.org.uk/page.php?s=6&p=145>.

★ **CWUAAT 2008: 4th Cambridge Workshop on Universal Access and Assistive Technology**, April 13–16, 2008, Cambridge, United Kingdom. University of Cambridge Department of Engineering, <http://rehab-www.eng.cam.ac.uk/cwuaat/>.

★ **2008 Quality Institute for Healthcare (QIHC)**, May 5–7, 2008, George R. Brown Convention Center, Houston, TX. Quality Institute for Healthcare, 1001 Avenida de las Americas Houston, Texas 77010, <http://www.qihc.asq.org>.

★ **XVIII World Congress of Safety and Health at Work**, June 29–July 2, 2008, COEX Convention Center, Seoul, Korea. Asia Pacific Occupational Safety and Health Organization, <http://www.aposho.org/index.jsp>.

★ **Fourth International Conference on Traffic & Transport Psychology**, August 31–September 4, 2008, at the Capital Hilton, Washington, D.C. International Association of Applied Psychology, Division 13: Traffic and Transport Psychology, <http://www.icttp.com>.

★ *Indicates new listing* ☒

Assistant, Associate, and Full Professor Positions Iowa State University

of Science and Technology

The Department of Industrial and Manufacturing Systems Engineering (IMSE) at Iowa State University invites applications for faculty positions at all levels (assistant, associate, and full professor), in each of our three focus areas: advanced manufacturing, applied operations research, and human factors/ergonomics. The IMSE department offers B.S., M.S., and Ph.D. degrees in IE, and maintains strong undergraduate and graduate programs supported by laboratories in areas such as operations research and production systems, manufacturing processes, rapid manufacturing, metrology, ergonomics and enterprise computing. Additional information about our department is available at www.imse.iastate.edu.

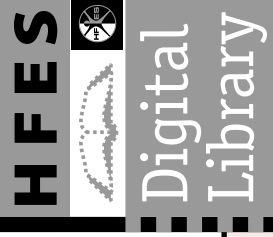
Successful candidates will possess a Ph.D. in Industrial Engineering or a related field. For an appointment at an assistant professor level, candidates must demonstrate high potential to develop and conduct a productive research program, and the ability to teach at both undergraduate and graduate levels. Candidates for associate and full professor levels should demonstrate an exemplary record of achievement in research, teaching and service.

The department is especially interested in candidates whose expertise and research interests intersect our College of Engineering interdisciplinary research and education clusters in Information and Decision Sciences, Engineering for Sustainability, Engineering for Extreme Events, Bioscience and Engineering, and Energy Science and Technology. Further information can be found at www.engineering.iastate.edu/clusters. As appropriate, candidates may wish to address how their interests relate to one or more of those cluster areas in their cover letter.

To be considered for a position, please e-mail your application consisting of a cover letter, vita, research and teaching plans, and the names of at least three references as a single PDF file to: mlfranco@iastate.edu. Review of applicants will begin November 1, 2007.

We particularly encourage women and underrepresented minorities to apply. Iowa State University is an Equal Opportunity/Affirmative Action Employer and an NSF ADVANCE grantee with the goal of enhancing the success of women faculty in STEM fields.

Coming SOON



HFES DIGITAL LIBRARY-ARCHIVE

The Human Factors and Ergonomics Society is proud to bring you a new member benefit: the **HFES Digital Library-Archive**. The HFES DL is scheduled to open Fall 2007 and will contain older volumes* of these titles:

- *Human Factors: The Journal of the Human Factors and Ergonomics Society*
- *Ergonomics in Design: The Quarterly of Human Factors Applications*
- *Journal of Cognitive Engineering and Decision Making*
- *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*
- *Reviews of Human Factors and Ergonomics*

HFES MEMBERS: As long as you're a member, you'll have free access to the older issues* of all five titles!

If you think your colleagues or corporate or university library might be interested in the HFES Digital Library-Archive, let them know that HFES is making this excellent collection available at the lowest rates if they subscribe by **November 2, 2007:**

Early bird rate for nonmembers: \$600 (regularly \$750)
Early bird rate for institutions: \$1,300 (regularly \$1,500)
2009 rates:..... \$950 for nonmembers, \$1,900 for institutions

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FLASH!

Start planning for the 52nd Annual Meeting!

September 22-27, 2008
New York Marriott Marquis Times Square,
New York City

Tentative Dates:

Proposal submission site opens
mid-November 2007

Proposals due
January 28, 2008

Acceptance/rejection notices sent
March 21, 2008

Proceedings papers due
May 26, 2008

Stay tuned for more info.

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