JON W. ULRICH, MA, PHD

ACADEMIC PREPARATION

PhD Industrial Engineering, Arizona State University, Tempe, AZ 2007
Management of Technology, Operations Research & Production Systems, Human Factors

MA Psychology, California State University, Northridge, CA 1992
Human Factors & Applied Experimental Psychology

BS Mechanical Engineering, University of California, Santa Barbara, CA 1979

HONORS & AWARDS

First recipient of recognition award by ASU Associated Students: Polytechnic 2011

Fellow – Preparing Future Faculty: ASU 1999 - *Present*

AΠM National Industrial Engineering Scholastic/Leadership Honor Society 2004 - *Present*

Faculty of the Month, Grand Canyon University 3/2003

Third Place Award, ASME Student Design Competition (Project: Nitrogen-Gas Laser) 1979

ACADEMIC EXPERIENCE

Arizona State University Polytechnic, Mesa, AZ 2005 - *Present*
Mathematics Instructor: CISA
Selected to develop/administer first online offering of STP420 (SP11)
Developing online interactive workbook for business analysis courses & statistics.
Faculty Associate: ASM, EGR, & MMET (2005-2007)

Arizona State University, Tempe, AZ 1998 – 2001
Research Associate: USAF LAI (1999-2001); NSF engineering technologies cross training (1998)
Co-Mentor: IEE Capstone (2000); Enterprise Modeling (2001)

Embry-Riddle Aeronautical University, Worldwide Campus 1998 - *Present*
Adjunct Assistant Professor: Undergraduate & Graduate courses
Eagle Vision™ (synchronous online) certified instructor

University of Phoenix, Phoenix, AZ 1997 - 2016
Senior Adjunct Faculty: Undergraduate & Graduate courses
Selected faculty to teach experimental 16-week college mathematics courses
Conceived & co-developed basic mathematics preparatory workbook

Grand Canyon University, Ken Blanchard College of Business, Phoenix, AZ 1999 - 2004
Assistant Professor - Quantitative Methods & Information Systems
Developed & administered first MBA online courses: information systems, quantitative analysis
Evolved MBA *computer information systems* emphasis into *systems management* concentration
Developed & administered 3-course MBA *eCommerce* concentration
College Academic Advising Coordinator (2002-2004)
Adjunct (1999-2000)

HSigma, inc., Scottsdale, AZ 1994 - 2004
JACME^{2}T Course Developer/Instructor
Advanced Metrics: A Statistical Approach; *Statistical Primer for Metrics*; *Basic Metrics*

INDUSTRIAL EXPERIENCE

Second Wind Productions, LLC, Scottsdale, AZ 2005 - *Present*
Principle Consultant—Educational Materials
Mathematics for Business Analysis interactive online workbook (ISBN 978-1-5249-0806-5)
Introduction to Applied Statistics interactive online workbook (ISBN 978-1-5249-5515-1)

HSigma, inc. *nee* Human Systems Engineering, Scottsdale, AZ 1994 - 2004
President: Applied Statistics/Quality; Human Systems Analysis & Design; Process Improvement/Reengineering
HCD: Notional advanced three-man main battle tank crewstation psycho-physical, training, & informatics designs, including design specifications document & simulator build/test support (offsite location: TACOM, Warren, MI)
Expert Witness: Slip/Fall HF; Applied Sampling Statistics & Interpretation

BTI Consultants, Inc., Tempe, AZ 1992 - 1994
Case Development Engineer: Safety engineering analyses
Solved 9-year old accident case whereat two tractor-trailers collided with no surviving eye witnesses

Rogers Corporation, Flexible Interconnections Division, Chandler, AZ 1990 - 1992
Senior Quality Engineer
Served as quality liaison for flexible circuits between two factory locations & out-of-state customer sites: Identified& eliminated circuit failures within 2 days, keeping customer on delivery track
Senior Manufacturing Engineer/Senior Design Engineer (1990-1992)
Proactively developed work-around scheme for customer implementation of prototypes that fell below quality levels but were still fully functional: Received customer commendation letter
Provided technical/statistical engineering support to improve production team's overall product yields to >99% & >33% unit cost reductions for $1M annual P&L circuits & assemblies
Improved yields & costs: Excimer laser; hot-air (solder) leveling; Berkle (fast) lamination; Au plating
Senior Program Engineer (1990)
Conceived & developed method to convert two-sided flex circuit design into single-sided flex circuit design
Development team leader for document change control system where none previously existed

Litton Systems, Inc., Guidance and Control Systems Division, Woodland Hills, CA 1983 - 1990
Engineer Specialist
Wrote & coordinated winning $1M USAF-IMIP proposal to automate an existing production line's inter-/ intra-factory physical & information flows
Served as design-to-cost manufacturing liaison for cross-functional design team formed to make fiber optic guidance system more producible with goal of it being "maintenance depot disposable"
Conceived & co-developed low-cost, zero-stress-inducing optical navigation instrument mounting system (f_n > 3000 Hz)
Cost Account Manager: 40-cm RLG engineering prototype build (1986-1987)
Senior Engineer (1985-1988)
Chaired 12-cm SICBM RLG design coordination (mechanical, electrical, physics) meetings
Principle electro-mechanical design engineer for 40-cm ICBM RLG instruments
Conceived and co-developed true hermetic optical guidance instrument magnetic shield enclosure (Be/NiFe-alloy brazing process); negotiated limited exclusive rights contract with critical supplier
Applied HF to resolve cyclically recurring assembly/rework problem of reduced technician vigilance due to poor component design & bonding requirements

Litton Systems continued

Proactively co-designed laser-ignition capacitor that utilized magnetic shield as ground plane

Project/Design Engineer (1983-1985)

Conceived & co-developed hermetic laser welding of cast aluminum housings & constructs

Principle electromechanical designer of tactical Rb frequency standard

Hughes Aircraft Company, Ground Systems Group, Fullerton, CA 1978 - 1983

Member of the Technical Staff

Principal development & human factors engineer: Portable munitions deployment system (RCU, MCU); electromechanical/thermal designs of 4 towed sonar array analog circuit board assembly modules; AEGIS sensor cabinet high-density I/O panels & cable routing

Conceived & co-developed semi-automated cable routing charts resulting in >$300k annual cost savings (1983 dollars)

Designed & developed separate rotary switch mechanism to meet customer-specific, multi-action station activation, control, & fail-safe requirements for portable munitions deployment system

Student Engineer (1978-1979)

Component designer for prototype large-screen tactical liquid crystal display system

RESEARCH INTERESTS

Process design, development, optimization, reengineering, & reapplication

Development, design, and modeling of human systems & performance

PUBLICATIONS

Introduction to Applied Statistics Workbook (2017): 978-1-5249-5515-1.

Mathematics for Business Analysis Workbook, 2nd ed. (2016): 978-1-5249-0806-5.

Mitev, T., Custodia, T., Hristovski, K. D., & Ulrich, J. W. (2015). The Effects of Climate Change on Water Resources of Small Developing Countries—A Case Study of the Republic of Macedonia. *American Chemical Society*.

Jung, A. R., Hristovski, K., Ulrich, J. W., & Brown, A. F. (2015). Understanding Comprehension Levels of Emergency Notifications by Limited English Proficient US Residents: Case study of Korean-Americans in New York City. *Homeland Security & Emergency Management 2015*.

Bliss, M., Hristovski, K., & Ulrich, J. W. (2013). Compliance of Community Hospitals with the Chemical Facility Anti-Terrorism Standards (CFATS) in the Western United States. *Homeland Security & Emergency Management 2013, 10(2)*, 1–13

Mekhail, A. L., Niemczyk, M., Karp, M. R., & Ulrich, J. W. (2010). The Table Reading test as a predictor of pilot training performance. *Collegiate Aviation Review, 28(1)*, 101-114

Niemczyk, M. & Ulrich, J. W. (2009). Workplace preferences of millennials in the aviation industry. *International Journal of Applied Aviation Studies, 9(2)*, 207-220

Niemczyk, M. & Ulrich, J. (2009). Motivation and learning strategies influencing performance in an aviation course. *Collegiate Aviation Review, Spring* (sic)

Presentations

Niemczyk, M. & Ulrich, J. (2010). Workplace Preferences of Millennials in the Aviation Industry. Invited speaker to Aviation Accreditation Board International (AABI) Annual Meeting, Kent, Ohio, July 15, 2010

GRADUATE & BARRETT HONORS STUDENT COMMITTEES

Co-Chair

Patrick Carrube: ETM: Completed 2015
Alice Jung: ETM: Completed 2014

Committee Member

Morgan Bliss: ETM: Completed 2013
Andrew Bridges: ABS: Completed 2013
Jonathon Kurant: ATM: Completed 2012
Futoshi Nakagawa: ATM: Completed 2011
Anthony Mekhail: ATM: Completed 2010

RESEARCH

Arizona State University, Tempe, AZ 1998 - *Present*

Instructor
Advisor: Undergraduate research project(s); Barrett Honors faculty
PhD Candidate: *Performance Effects of Varying Traffic Guidance Arrow Size in a Simulated Driving Environment*
Research Associate (6/98-8/01)
The creation of a scenario-based, dynamic program management workbench using the Lean Enterprise Model
USAF Contract No. 99-5608-36-2 (PI: W. M. Carlyle, PhD)
USAF Contract No. 99-5608-33-1 (PI: D. L. Shunk, PhD)
Cross-training technicians & engineers for semiconductor manufacturing
NSF Grant No. DUE-9850310 (PI: D. A. Rollier, PhD)

HSigma, inc. *nee* Human Systems Engineering 1995 - 1996

Onsite Consultant (stationed Warren, MI): Applied human factors in the design/testing of three notional *glass cockpit* battle tank crewstations

California State University, Northridge, CA 1984 - 1992

Master's Candidate: *Non-Acoustic Short-Term Memory Encoding for Visually-Presented Verbal Information*
Human Factors student observer/investigator (1987)
Ford Motor Company marketing research (MMI) automotive study

SERVICE

Arizona State University Polytechnic

Committee Co-Chair:
Graduate student Master's theses and projects
Committee Member:
University Residency Appeals
University Hearing Board
Graduate student theses/projects
Mathematics Instructor search committee (SU2010)
Written several recommendation letters for students:
Academic: Students have been accepted into medical & law schools, 4+1 accelerated Master's
Scholarship: In excess of $300k has been awarded across all recommended students
ASM Monthly Faculty Meeting Minutes Recorder (2010-2013)

Arizona Center for Nature Conservation: Phoenix Zoo, Phoenix 2011-*Present*
Core Volunteer (1900+ hours: Auxiliary, Education, Operations, Park Rangers, Volunteer Office)
Coordinator: SRP Solar Panel Displays; SDS Database Development
Basic Statistics Overview: Zoo's Applied Master's Program (unpaid)

Grand Canyon University 8/99 - 11/04
Academic Advising Coordinator to graduate & undergraduate business students (8/02-10/04)
Proactively created position (SU02)
Responsible directly for 70+ BBA students, indirectly for 130 BBA/MBA students
Co-developer of revamped business division student advisement & application system
Co-developer of revised BBA Degree Program for integration of new University GenEd requirements
Developer of revised/enhanced MBA Student Candidate application/evaluation form & process (3/04)
Attended/contributed to twice-weekly college & monthly university faculty meetings

Committees:
Faculty Council (1/02-10/04)
Subcommittee Chair: Formalize promotion/tenure appeals process thru Faculty Council (FA03)
President's Administrative Advisory Committee (8/03-12/03; 8/04-10/04)
Key Member MBA Student Candidate Interview Committee (6/03-10/04)
University Assessment Committee (8/02-5/04)
Instrumental in introducing application/use of statistical analysis/interpretation tools
Business Division Faculty Search Committee (8/02-2/03)
Academic Advising Committee (1/01-10/04)
Academic Appeals Ad Hoc Committee (7/03)
University Information Systems Master Plan (1/01-5/01)
Information Systems (8/99-5/01)

SELECTED ACCOMPLISHMENTS

Applied Human Factors

Assumed existing human factors engineering responsibilities for notional *Future Main Battle Tank* crew space designs: soldier requirements, space claim allocations, functional hard switches, warning system, personal data cards, mission log, target acquisition & situational awareness information management systems, survivability system interface (15-month out-of-state assignment: 1995-1996)

Resolved cyclically recurring assembly fabrication failure (reduced technician vigilance)

Applied human factors & cognitive psychology principles as expert witness in "slip/fall" case

Solved 9-year old accident case wherein two tractor-trailers collided with no surviving eye witnesses

Eliminated product failure modality by reassigning adhesive cure operation

Substantially increased I/O panel connector densities by successfully challenging fabrication and assembly design guidelines

Human Factors student observer/investigator (1987): Ford Motor Company marketing research study

Augmented crowd control & security environments at annual public entertainment event via applied cognitive psychology perceptual principles

Enhanced forensic case flow & development by introducing color-coding scheme to filing system

Quality

- Provided statistical engineering support to improve production team's production yields to >99%
- Introduced purpose & use of quality control charts to University Assessment Committee (SP04)
- Served as quality liaison for flexible circuits between two factory locations & out-of-state customer sites; identified root cause of circuit failures (cracking of circuit traces due to improperly vetted prototype engineering process)
- Proactively developed work-around schemes for customer implementation of prototype parts which fell below expectation/quality levels but which were still fully functional
- Quality-related courses developed & taught: *Basic Metrics*; *Statistical Primer for Metrics*; *Advanced Metrics: A Statistical Approach* (1999-2003)

Process Improvement

- Co-developed optional *math skills* workshop & supporting workbook to better prepare returning adult students for rigors of college mathematics courses → enhanced student performance & retention
- Worked with Registrar to eliminate need for teachers to make prerequisite checks each term by developing means to automatically restrict access of undergraduate courses to only qualified students
- Conceived of *yin-yang* course enrollment paradigm that allows graduate online students on financial aid to effectively take one course at a time but two courses overall during an academic semester
- Conceived & co-developed instructional online library database log-in interface page thereby facilitating quicker student/faculty access; reduced librarian work load & eliminated need for separate server
- Re-engineered production process sequences resulting in cycle time reductions of up to 67% on >25 end-of-production flexible circuits & assemblies
- Co-developed semi-automated cable routing charts resulting in $\$300k^{+}$ annual cost savings (1983$)
- Co-developed hermetic laser welding of cast-aluminum housings, reducing overall fabrication costs
- Developed methodology to increase technician vigilance during mission critical component bonding step
- Purged redundant bake operations in high-density polyimide circuit production resulting in reduced cycle times, unit costs, & increased process capability of hot-air soldering & lamination work cells

Design

- Developing innovative approach for online delivery of mathematical subject matter for start-up company
- Identified need for & co-developed *math skills* workshop & associated workbook
- Innovated *yin-yang* pedagogy for online courses to enhance student education while increasing financial aid fund accessibilities
- Conceived & co-developed true hermetic (Be/NiFe-alloy brazing process) optical guidance instrument magnetic shield enclosure
- Proactively re-engineered inter-card connector assembly for low-cost, disposable munitions guidance system, reducing parts costs by 50%
- Innovated low cost, zero-stress inducing optical instrument mechanical mounting system (f_n > 3000 Hz)
- Increased standard I/O-panel connector densities by up to 50%, exceeding customer requirements
- Principal developmental design engineer for: portable munitions deployment system; electrical layout & electromechanical design of 4 distinct towed sonar array analog circuit board assembly modules; 40- & 12-cm ring laser gyroscopes; various flexible circuits & their processes

Design

Conceived & co-developed masking technique to selectively remove polyimide material via excimer laser in mass circuit production environment

Co-designed means of hermetically sealing & then separating magnetic shield enclosure halves via Nd:YAG laser

Designed & developed separate rotary switch mechanism to meet customer-specific, multi-action activation, control, & fail-safe requirements (munitions deployment system)

Created optical mount system for large screen tactical display system whereby precise alignments made in the laboratory were readily recreated in field applications

Made significant contributions to the electro-/opti-mechanical design/packaging of optical inertial navigation instruments: RLG (12, 17, 40, 52 cm); ZLG (18, 20 cm; single-/multi-axis); FOG (single-/multi-axis); tactical rubidium frequency standard

Leadership

Alpha Pi Mu Scholastic/Leadership Honorary Society (SP04 - *Present*)

Fellow - Preparing Future Faculty (SP01 - *Present*)

Arizona HFES Chapter Executive Council Director (1994 - 1998; 2006)

Principal in changing an academic business program from a *computer information systems* emphasis into a *systems management* concentration (circa 2003)

Led business college in academic advising (5/02-10/04)

Chaired Faculty Council *ad hoc* committee; team crystallized the method by which promotion & tenure recommendations can be challenged & reviewed by appropriate Faculty Council membership (FA03)

Human factors liaison between US Army SMEs & design team for notional advanced main battle tank crew station designs & layouts (1995-1996)

Led production team to yields of >99% & cost reductions of >33% on more than two dozen end-of-program-life flexible circuits & assemblies (1990-1991)

Development team leader for document change control system where none previously existed (1991)

Assumed leadership role to write & coordinate winning $1M USAF-IMIP proposal to automate an existing production line's inter-/intra-factory product & information flows (1989)

Manufacturing consultant on cross-functional design team formed to make fiber optic guidance system more producible, with goal of it being "maintenance depot disposable" (1989)

Chaired 12-cm RLG design coordination (mechanical, electrical, physics) meetings (1987-1988)

Negotiated limited exclusive rights contract with critical process supplier (circa 1986)

Led faculty to donate funds towards the creation of a campus-wide *Student Senate* (2003)