3 Director’s Welcome
4 IIHR Organization Chart
6 IIHR Facilities
8 IIHR Research Engineers and Research Scientists
16 Administrative Staff
19 Research Computing Support
23 IIHR Engineering Services

Front cover photograph: IIHR researcher John S. McNown with students representing more than 10 different countries. They are inspecting the institute’s air-speed measurement tunnel.

Photo this page: In the 1930s, IIHR researchers modeled the Upper Mississippi River lock and dam system (such as this erodible bed model of the Alton, Ill., area).
Welcome to IIHR—Hydroscience & Engineering (IIHR), and to a new school year! We’re very pleased you’ve chosen to continue your education and professional development at our world-renowned research institute. I know you will find your studies here both rewarding and fascinating.

IIHR’s mission focuses on education, research, and public service in hydraulic engineering and fluids research. Our flagship facility is the historic C. Maxwell Stanley Hydraulics Laboratory (Shl) on the banks of the Iowa River. This iconic structure has spanned the almost-100-year history of the institute, and has for many of us come to represent the magnificent foundation upon which the IIHR of today is built. If you are not housed in Shl, I hope you will have an opportunity to spend time here.

IIHR is a unit of the University of Iowa’s College of Engineering. At IIHR, you’ll find that students, faculty members, and research engineers work together to understand one of the world’s greatest resources—water. You’ll benefit from IIHR’s comprehensive multidisciplinary approach, which includes basic fluid mechanics (including water, air, blood, and more), laboratory experimentation, and computational approaches.

You’ll gain hands-on experience through close cooperation with faculty members on research projects funded by industry, government, and other organizations. Though IIHR is a relatively small organization, it has long played a major role in the worldwide effort to understand and use water and its flow.

A quick note about our name, because so many people ask: originally, IIHR was an acronym for the Iowa Institute of Hydraulic Research. In 2002, our name was officially changed to IIHR—Hydroscience & Engineering to better reflect the broad scope and modern multidisciplinary nature of the institute’s focus. The acronym “IIHR” is retained to reflect our rich history and the past century’s achievements.

Again, welcome to IIHR and to an exciting new chapter in your academic life! I look forward to getting to know you better as the year progresses. Please do not hesitate to meet with me if I can help in any way.

Gabriele Villarini

P.S. The information in this brochure can be found online at:

- www.iihr.uiowa.edu/facilities/support-services/documents
The IIHR staff includes skilled individuals from various disciplines:

- Research engineers and scientists from, among others, the UI departments of:
  - Civil and Environmental Engineering
  - Mechanical Engineering
  - Biomedical Engineering
  - Earth and Environmental Sciences
  - Geographical and Sustainability Sciences
- Staff with full-time IIHR appointments
- Postdoctoral research associates
- Visiting faculty and researchers
- Support staff who provide:
  - Administrative and financial support
  - Assistance with travel arrangements
  - Grant preparation and submission support
  - Editorial assistance
  - Research computing support
  - Machining, carpentry, electrical, and model construction support

The IIHR director leads the institute, and is ultimately responsible for all its endeavors, including staff activities, laboratory facilities, research procedures, reports, and finances. The director also pursues his own research and teaching interests. The director reports to the dean of the College of Engineering and to the UI vice-president for research, and ultimately to the university president. Research engineers directly supervise the various projects and graduate student–conducted investigations at IIHR.
IIHR FACILITIES

Stanley Hydraulics Lab — SHL
320 S. Riverside Drive

Hydraulics Model Annex — HMA
129 W. Court Street

Hydraulics East Annex — HEA
140 W. Harrison Street

Hydraulics Wind Tunnel Annex — HWTA
130 W. Harrison Street
IIHR FACILITIES

Iowa Geological Survey Building—IGSB
2390 Old Farmstead Rd., UI Research Park

Hydraulics Annex 1—HA1
2310 Old Farmstead Rd., UI Research Park

Hydraulics Annex 2—HA2
2275 Old Farmstead Rd., UI Research Park

Hydraulics Wave Basin Facility—HWBF
Old Farmstead Rd., UI Research Park

James Street Laboratory—JSL
2433 James Street #3, Coralville
HYDROMETEOROLOGY, CLIMATOLOGY, EXTREME EVENTS, SEASONAL FORECAST, REMOTE SENSING OF RAINFALL, AND APPLIED STATISTICS

**Gabriele Villarini**
107c SHL  384-0596
gabriele-villarini@uiowa.edu
- Hydrometeorology, climatology, extreme events, climate change, hurricanes, seasonal forecast, remote sensing of rainfall, and applied statistics
- PhD, University of Iowa, 2008
- Associate Professor, CEE
- Director, IIHR

**Antonio Arenas Amado**
323A SHL  335-6061
antonio-arenasamado@uiowa.edu
- Fish passage design, physically-based watershed simulations, and total dissolved gas modeling
- PhD, University of Iowa, 2012
- Assistant Research Engineer, IIHR

**Kelly Baker**
536 CPHB  384-4008
kelly-k-baker@uiowa.edu
- Occupational and environmental health
- Assistant Professor, OEH

**Allen Bradley Jr.**
523A SHL  335-6117
allen-bradley@uiowa.edu
- Hydrology, hydroclimatology, and watershed modeling
- PhD, University of Wisconsin-Madison, 1992
- Professor and DEO, CEE

**James Buchholz**
323B SHL  335-5224
james-h-buchholz@uiowa.edu
- Unsteady aerodynamics of biologically-inspired underwater and aerial vehicles, urban microclimate and transport phenomena, and cardiovascular fluid mechanics
- PhD, Princeton University, 2006
- Associate Professor, ME

**Pablo Carrica**
223D SHL  335-6381
pablo-carrica@uiowa.edu
- Multiphase flow, computational fluid dynamics, and boiling and heat transfer
- PhD, Instituto Balseiro (Argentina), 1993
- Professor, ME

**Kung-Sik Chan**
241 SH  335-2849
kung-sik-chan@uiowa.edu
- Time series analysis, chaos, semiparametric statistics, stochastic differential equations, stochastic processes, and ecological modeling
- PhD, Princeton University, 1986
- Professor, SAS

**Jiwoong Choi**
2428 SC  384-0933
jiwoong-choi@uiowa.edu
- Computational fluid dynamics and numerical simulations of human respiratory flow
- Assistant Research Scientist, IIHR
GEORGE CONSTANTINESCU
323C SHL 384-0630
george-constantinescu@uiowa.edu
- Computational fluid dynamics, river mechanics, turbulence, and hydraulics
- PhD, University of Iowa, 1997
- Professor, CEE

DAVID CWIERTNY
4156 SC 335-1401
david-cwiertny@uiowa.edu
- Pollutant fate and transport, and water and watershed treatment
- PhD, Johns Hopkins University, 2006
- Professor, CEE

KAJSA DALRYMPLE
W339 AJB 335-3360
kajsa-dalrymple@uiowa.edu
- Intersections between science, communication, and public policy
- PhD, University of Wisconsin-Madison, 2011
- Associate Professor, JMC

IBRAHIM DEMIR
314 SHL 335-5780
ibrahim-demir@uiowa.edu
- Environmental information systems, data informatics, scientific visualization, data management, and web-based systems
- PhD, University of Georgia, 2010
- Assistant Professor, CEE

JEFF DORALE
35A TH 335-0822
jeffrey-dorale@uiowa.edu
- Paleoclimatology, paleoecology, global change, use of isotopic and elemental tracers and chronometers to reconstruct past environmental conditions
- PhD, University of Minnesota, 2001
- Associate Professor, EES

WILLIAM EICHINGER
523E SHL 335-6034
william-eichinger@uiowa.edu
- Environmental hydrology and fluid dynamics, surface-atmosphere interactions, atmospheric pollution control and remediation, atmospheric physics, and remote sensing
- PhD, University of California-Davis, 1995
- William D. Ashton Professor of Civil Engineering; Professor, CEE

TORI FORBES
W374 CB 384-1320
tori-forbes@uiowa.edu
- Synthesis and characterization of novel actinide-based nanotubes and molecular clusters, X-ray diffraction and scattering techniques, transport and mobility of nuclear materials in aqueous environmental systems, and radiochemistry
- PhD, University of Notre Dame, 2008
- Associate Professor, CHEM
CASEY HARWOOD
223F SHL 335-5749
casey-harwood@uiowa.edu
Experimental fluid dynamics, fluid-structure interactions, lifting surfaces and propellers
PhD, University of Michigan, 2014
Assistant Professor, ME

KERI HORNBUCKLE
4126 SC 384-0789
keri-hornbuckle@uiowa.edu
PCBs, cycling of organic contaminants in the Great Lakes, air pollution, and environmental engineering
PhD, University of Minnesota, 1996
Donald E. Bently Professor in Engineering; Professor, CEE

CHRIS JONES
332 TH 335-0589
christopher-s-jones@uiowa.edu
Water quality and agriculture, water monitoring, nutrient and sediment transport
PhD, Montana State University-Bozeman, 1989
Research Engineer, IIHR, and Adjunct Associate Professor, CEE

CRAIG JUST
4111 SC 335-5051
craig-just@uiowa.edu
Measuring water quality at rapid intervals, mussels as living biosensors, fate of pharmaceuticals in non-conventional wastewater treatment systems, and human exposure to PCBs from industrial dredging
PhD, University of Iowa, 2001
Associate Professor, CEE

WITOLD F. KRAJEWSKI
523D SHL 335-5231
witold-krajewski@uiowa.edu
Hydrometeorology, remote sensing, and water resources systems
PhD, Technical University of Warsaw (Poland), 1980
Rose and Joseph Summers Chair in Water Resources Engineering; Professor, CEE; and Director, Iowa Flood Center

ANTON KRUGER
523F SHL 335-6287
anton-kruger@uiowa.edu
Hydrometeorology instrumentation, particle image velocimetry and image processing, and visualization/management of large geographic datasets
PhD, University of Iowa, 1991
Professor, electrical and computer engineering; and Donald E. Bently Faculty Fellow of Engineering

DREW LATTAL
4105 SC 335-5646
drew-latta@uiowa.edu
Aquatic redox reactions, fate and transport of groundwater contaminants, and geochemistry of major and trace metals
PhD, University of Iowa, 2010
Assistant Research Scientist, IIHR
GREGORY LEFEVRE  
4106 SC  335-5655  
gregory-lefevre@uiowa.edu  
- Fundamental mechanisms related to the microbial and vegetative biotransformation of emerging contaminants in aquatic environments  
- PhD, University of Minnesota, 2012  
- Assistant Professor, CEE

HANS-JOACHIM LEHMLER  
221 IREH  335-4310  
hans-joachim-lehmler@uiowa.edu  
- Disposition and metabolism of chiral environmental contaminants, toxicity of perfluorinated surfactants, and interaction of fluorinated materials with biological lipid assemblies  
- PhD, University of Bonn (Germany), 1995  
- Professor, OEH

JIAJIA LI  
325D SHL  335-7001  
jiajia-li@uiowa.edu  
- PhD, University of Iowa, 2015  
- Assistant Research Scientist, IIHR

CHING-LONG LIN  
2406 SC  335-5673  
ching-long-lin@uiowa.edu  
- Simulation of two-phase flow, free-surface turbulence, lattice-Boltzmann simulation of liquid-gas, liquid-liquid, and fluid-solid interactions for microfluidics, four-dimensional assimilation of atmospheric LiDAR data, and pulmonary flow  
- PhD, Stanford University, 1994  
- Edward M. Mielenk and Samuel L. Harding Professor of Mechanical and Industrial Engineering; Professor and DEO, ME

RICARDO MANTILLA  
523B SHL  335-5941  
ricardo-mantilla@uiowa.edu  
- Surface hydrology and river networks  
- PhD, University of Colorado, 2006  
- Assistant Professor, CEE

RACHEL MAREK  
4105 SC  335-5585  
rachel-f-marek@uiowa.edu  
- Siloxanes, pesticides, PCBs, and PCB breakdown products in the environment and in humans, and passive air sampling of PCBs in schools  
- PhD, University of Iowa, 2013  
- Assistant Research Scientist, IIHR

COREY MARKFORT  
325E SHL  335-6168  
corey-markfort@uiowa.edu  
- Environmental fluid mechanics, turbulence, atmospheric boundary layer, renewable energy and wind engineering, biosphere-atmosphere exchange, hydrology, water resources engineering, physical limnology, and earth systems dynamics and change  
- PhD, University of Minnesota, 2013  
- Assistant Professor, CEE

EZQUEL MARTIN  
423B SHL  335-6022  
juan-martin@uiowa.edu  
- CFD and EFD  
- PhD, University of Illinois at Urbana-Champaign, 2009  
- Assistant Research Engineer, IIHR
ANDRES MARTINEZ ARANEDA
4105 SC 335-6454 andres-martinez@uiowa.edu
- Environmental contaminant fate and transport modeling, with emphasis in analysis and simulation of the behavior of organic pollutants in urban, remote, and industrial areas
- PhD, University of Iowa, 2010
- Adjunct Assistant Professor, CEE; and Assistant Research Engineer, IIHR

TIM MATTES
4112 SC 335-5065 tim-mattes@uiowa.edu
- Environmental biotechnology, oxidative biocatalysis, evolution of microbial biodegradation pathways, and application of genomics and proteomics techniques in the study of environmentally relevant microbial communities
- PhD, Cornell University, 2004
- Professor, CEE

MARIAN MUSTE
302 SHL 384-0624 marian-muste@uiowa.edu
- Experimental methods in hydraulics and fluid mechanics, sediment transport, environmental fluid mechanics, and engineering education
- PhD, University of Iowa, 1995
- Adjunct Professor, CEE, Research Engineer, IIHR, and Associate Director, LACMRERS

JAMES NIEMEIER
2 HWTA 384-2918 james-niemeier@uiowa.edu
- Water quality, nutrient fate and transport, biogeophysics, and near-surface environmental geophysics
- PhD, University of Iowa, 2010
- Assistant Research Scientist, IIHR

ELISE PIZZI
321 SH 335-2360 elise-pizzi@uiowa.edu
- Water sustainability
- PhD, University of Colorado-Boulder, 2015
- Assistant Professor, PS

MARCELA POLITANO
310 SHL 335-6393 marcela-politano@uiowa.edu
- Total dissolved gas modeling, two-phase flow modeling, numerical modeling of hydraulic transients, particle tracking and dispersion, heat and mass transfer, and computational fluid dynamics
- PhD, Instituto Balseiro (Argentina), 2001
- Adjunct Associate Professor, CEE, and Research Engineer, IIHR

NIRMAL RAI
3131 SC nirmalkumar-rai@uiowa.edu
- Computational mechanics
- PhD, University of Iowa, 2015
- Assistant Research Engineer, IIHR
Yugo Sanada  
1 HWBA 319-467-4572  
yugo-sanada@uiowa.edu  
- Ship hydrodynamics  
- PhD, Osaka University (Japan), 2007  
- Associate Research Scientist, IIHR  

Michelle Scherer  
4105 SC 335-5654  
michelle-scherer@uiowa.edu  
- Fundamental and practical aspects of chemical contamination of aquatic environments, heterogeneous processes occurring in both natural and engineered systems, including surface redox reactions and adsorption/complexation phenomena, and understanding and modeling the kinetics of transformation reactions at the mineral-water interface  
- PhD, OGI School of Science and Engineering, 1998  
- Donald E. Bently Professor in Engineering; Professor, CEE  

Keith Schilling  
340A TH 335-1422  
keith-schilling@uiowa.edu  
- Hydrogeology, hydrology, and nonpoint source pollution  
- PhD, University of Iowa, 2009  
- Adjunct Assistant Professor, EES; State Geologist of Iowa, Iowa Geological Survey; Research Engineer, IIHR  

Jerry L. Schnoor  
4112 SC 335-5649  
jerald-schnoor@uiowa.edu  
- Water quality, phytoremediation, and climate change  
- PhD, University of Texas, 1975  
- Allen S. Henry Chair in Engineering; and Professor, CEE  

Sibyl Secchi  
219 JH 335-1927  
silvia-secchi@uiowa.edu  
- Natural resources economics focusing on a wide range of interdisciplinary issues related to agriculture, energy, and the environment  
- PhD, Iowa State University, 2000  
- Associate Professor, GSS  

Oishik Sen  
3131 SC 335-5947  
oishik-sen@uiowa.edu  
- Multiscale modeling of complex, multiphysics systems under high-speed machine learning and uncertainty quantification, structure-property relationships, high-speed compressible flows, plasticity modeling under shocks, and reactive materials and flows  
- PhD, University of Iowa, 2016  
- Assistant Professor, ECE  

Ananya Sen Gupta  
4016 SC 335-5947  
ananya-sengupta@uiowa.edu  
- Shallow water acoustic channel estimation and tracking, interference mitigation in multi-user detection and equalization  
- PhD, University of Illinois at Urbana-Champaign, 2006  
- Assistant Professor, ECE
<table>
<thead>
<tr>
<th>Name</th>
<th>Office</th>
<th>Phone</th>
<th>Email</th>
<th>Research Interests</th>
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</table>
| Bongchul Seo          | 323E SHL| 384-2041| bongchul-seo@uiowa.edu          | Radar hydrology and rainfall uncertainties  
PhD, University of Iowa, 2010  
Assistant Research Scientist, IIHR                                                                                                                     |
| Charles Stanier       | 4122 SC | 335-1399| charles-stanier@uiowa.edu        | Laboratory investigation and field sampling of air pollution, particularly aerosol particles, computational simulations of atmospheric, aerosol chemistry, and health effects of airborne contaminants  
PhD, Carnegie Mellon University, 2003  
Professor, CBE                                                                                                                                            |
| Fred Stern            | 223C SHL| 335-5215| frederick-stern@uiowa.edu        | 6DOF viscous ship hydrodynamics, high performance multi-criteria CFD-based optimization for ship design, towing tank maneuvering test flow-map measurement system, and integration of simulation technology into undergraduate engineering courses and laboratories  
PhD, University of Michigan, 1980  
George D. Ashton Professor of Hydrosience and Engineering; and Professor, ME                                                                                      |
| Eric Tate             | 502 JH  | 335-0259| eric-tate@uiowa.edu              | Development of social vulnerability and resilience indicators, assessment of uncertainty and sensitivity in geospatial models, and GIS modeling in support of flood hazard mitigation  
PhD, University of South Carolina, 2011  
Associate Professor, GSS                                                                                                                                     |
| H.S. Udaykumar        | 2408 SC | 384-0832| hs-kumar@uiowa.edu               | Numerical methods for materials processing, biofluid mechanics, elastoplastic wave propagation in impacting media, fluid-structure interactions, and advanced numerical schemes for moving boundary problems  
PhD, University of Florida, 1994  
Professor, ME                                                                                                                                                    |
| Sarah Vigmostad       | 1420 SC | 384-2008| sarah-vigmostad@uiowa.edu        | Computational fluid mechanics, cardiovascular biomechanics, multiscale modeling, fluid-structure interactions  
PhD, University of Iowa, 2007  
Associate Professor, BE                                                                                                                                 |

IIHR—HYDROSCIENCE & ENGINEERING
IIHR RESEARCH ENGINEERS & RESEARCH SCIENTISTS

ZHAOYUAN WANG
223E SHL  335-6293
zhaoyuan-wang@uiowa.edu

- CFD, free surface and interfacial flows, VOI and level set methods, free surface tracking, and surface tension modeling
- PhD, University of Texas, 2006
- Assistant Research Scientist, IIHR

SUNG-HWAN YOON
225B-2 SHL  384-2191
sung-hwan-ymoon@uiowa.edu

- CFD, higher-order accurate method, overset mesh technique, adaptive mesh refinement
- PhD, Seoul National University, (Korea), 2011
- Assistant Research Scientist, IIHR

LARRY J. WEBER
306 SHL  335-5597
larry-weber@uiowa.edu

- Water quality, watershed processes, physical modeling, river hydraulics, hydropower, computational hydraulics, ice mechanics, and fish passage facilities
- PhD, University of Iowa, 1993
- Edwin B. Green Chair in Hydraulics; and Professor, CEE

NATE YOUNG
423C SHL  384-1732
nathan-young@uiowa.edu

- Ecohydraulics, field measurements, and freshwater mussel habitats
- PhD, University of Iowa, 2006
- Adjunct Associate Professor, CEE; Research Engineer, IIHR; and Director, LACMRERS

FRANK H. WEIRICH
217 TH  335-5272
frank-weirich@uiowa.edu

- Geomorphology and related hydrologic processes, sediment transport and reservoir sedimentation, and watershed response to environmental changes
- PhD, University of Toronto (Canada), 1982
- Associate Professor, EES

WEI ZHANG
325-3 SHL  weizhang-3@uiowa.edu

- Tropical cyclones and climate modeling
- PhD, Chinese University of Hong Kong, 2011
- Assistant Research Scientist, IIHR

ABBREVIATIONS

- BE: Biomedical Engineering
- CBE: Chemical and Biochemical Engineering
- CEE: Civil and Environmental Engineering
- CHEM: Chemistry
- CSE: Computer Science and Engineering
- ECE: Electrical and Computer Engineering
- EES: Earth and Environmental Sciences
- GSS: Geographical and Sustainable Sciences
- JMC: Journalism and Mass Communication
- ME: Mechanical Engineering
- OEH: Occupational and Environmental Health
- PS: Political Science
- SAS: Statistics and Actuarial Science
Dear New IIHR Students and Staff,

Welcome to IIHR! We’d like to introduce you to the administrative staff at IIHR. Administrative staff members conduct essential activities that support the research, education, and service that are at the core of IIHR’s mission. The work falls into two main categories:

**General Administration:** Carmen Langel, director of development and communications, leads the administrative staff who perform duties related to external communication (i.e., the website, newsletters, brochures, etc.), internal communications (i.e., IIHR Weekly Update emails), development (grant preparation, fundraising, etc.); and university and IIHR policy questions in these areas. Langel also works closely with IIHR research staff to develop and submit grant and contract proposals. In addition, administrative staff members plan and set up meetings and presentations, serve as IIHR’s immigration liaison, and act as point of contact to schedule meetings with IIHR Director Gabriele Villarini.

**Accounting/Finance:** Teresa Gaffey, director of finance and business operations, manages and coordinates all IIHR financial operations, budgets, grants, reports, and activities. She and her team process staff and student employment paperwork and tuition payments. They also provide accounting support services as needed, including the processing of travel vouchers, payroll, purchasing requisitions, procurement card expenses, and reimbursements. Accounting staff members also collect payments from staff and students for personal printing, fax, and copy charges, as well as distributing office and building keys.

Please contact us with any questions or needs you may have. We wish you the best in all your educational endeavors!

Sincerely,

Teresa Gaffey  
Director of Finance and Business Operations  
107B SHL  
335-6166  
teresa-gaffey@uiowa.edu

Carmen Langel  
Director of Development and Communications  
107A SHL  
335-5841  
carmen-langel@uiowa.edu
ADMINISTRATIVE STAFF

TERESA GAFFEY
Director of Finance and Business Operations
107A SHL 335-6166
teresa-gaffey@uiowa.edu
- Manages and coordinates all IIHR financial operations, budgets, grants, reports, and activities.

MELISSA ECKRICH
Senior Accountant
133-8 SHL 335-5845
melissa-eckrich@uiowa.edu
- Provides accounting services, including processing employment paperwork, payroll, and grant and contract management.

SANDY GERARD
Program Associate
1 HWTA 335-5217
sandra-gerard@uiowa.edu
- Supports major programmatic initiatives, human resources, and post-award accounting.

HEATHER HUNTER
Supply Chain Associate
University Shared Services
133-3 SHL 335-4827
heather-a-hunter@uiowa.edu
- Provides administrative support processing internal forms to procure goods and services, reconciles departmental credit cards, and processes travel expense vouchers and reimbursement requests.

JENNIE PORTWOOD
Business Analysis Coordinator
107 SHL 353-3742
jennifer-portwood@uiowa.edu
- Provides accounting and database services, including printing access; key issuance; receipt of payments; database maintenance; post-award support; and financial and award reporting.

ROSEMARY TIWARI
Research Support Specialist
305 TH 384-0611
rosemary-tiwari@uiowa.edu
- Provides administrative and research support services for the IGS group, including management of building issues, social media outreach, awards compliance, and budgeting.

MEGAN WATSON
Supply Chain Associate
University Shared Services
100 WCTC 335-5272
megan-watson@uiowa.edu
- Provides administrative support processing internal forms to procure goods and services, reconciles departmental credit cards, and processes travel expense vouchers and reimbursement requests.
ADMINISTRATIVE STAFF

**CARMEN LANGEL**
Director of Development and Communications
107B SHL  335-5841
carmen-langel@uiowa.edu

- Manages all IIHR grant and contract submissions and oversees internal and external communications.

**LAURA MYERS**
Administrative Services Specialist
107-1 SHL  335-5253
laura-l-myers@uiowa.edu

- Provides administrative support, including website support; meeting planning; immigration support; and scheduling for the IIHR director.

**COLLIN DAVIS**
Business Development and Proposal Specialist
133-5 SHL  467-0243
collin-davis@uiowa.edu

- Researches and identifies funding opportunities, facilitates grant contract submissions, and provides marketing support.

**SUZANNE DOERSHUK**
Pre-Award Grants and Contracts Specialist
133-1 SHL  384-0701
suzanne-doershuk@uiowa.edu

- Provides proposal submission and grant application assistance, including budgeting, editorial assistance, document review, award documentation, and interface with DSP and sponsor people and systems.

**BREANNA SHEA**
Communications Specialist, Iowa Flood Center
133-7 SHL  384-1729
breanna-shea@uiowa.edu

- Develops and implements communication and outreach programs for the Iowa Flood Center (IFC) and the Iowa Watershed Approach (IWA).

**KATE GIANNINI**
IWA Communications Specialist
133-4 SHL  335-5233
kate-giannini@uiowa.edu

- Leads outreach, communication, and research activities for the Iowa Watershed Approach at the Iowa Flood Center; serves as liaison between IIHR researchers, partners, and external stakeholders.

**JACKIE HARTLING STOLZE**
Lead Communication Specialist, IIHR
133-6 SHL  335-6410
jackie-stolze@uiowa.edu

- Develops content for websites, newsletters, brochures, social media, and other IIHR communications. Serves as project manager on major publications and as IIHR archivist.
Dear New IIHR Students,

Welcome to IIHR!

I believe research computing is a subset of information technology, specializing in the computation and support resources needed to execute a successful research program. Research computing focuses on acquiring, processing, storing, presenting, and archiving the materials, data, codes, and publications involved in vibrant research activities. My group, Research Computing Support (RCS), strives to provide an efficient, effective computational platform for your research and leaves the day-to-day IT-related functions, such as email, to campus groups specializing in those services. RCS is, however, your point of contact for any IT-related question, and we will gladly find a solution provider if we don’t offer that support function ourselves.

Please look over the following materials related to IIHR’s support of research computing and feel free to contact me with any questions you have. I look forward to working with you!

Sincerely,

Mark Wilson
Director of Research Computing
423A SHL
335-5223
mark-wilson@uiowa.edu

OVERVIEW
RCS provides the computing foundation for all IIHR activities, including compute, web, authentication, local and cloud storage, and backup servers, as well as specialized software and laboratory data acquisition devices and codes. RCS staff members recommend, purchase, maintain, and dispose of computing- and technology-related equipment, software, communication, networking, and storage devices. They assist with access to the resources and services, ranging from desktop systems to high-performance computing (HPC) systems and techniques provided by IIHR, the College of Engineering, and the university.

LOCATION
The IIHR Research Computing Support group has offices on the fourth floor of SHL, with an assembly and repair area in Room 27 SHL (below Room 127 at the south end of SHL—take the south steps down one level and turn north).

HOURS
Computing assistance is available from our assembly/repair area in Room 27 SHL. This area is open Monday through Friday and follows the flexible hours of the student workers. If you need assistance and this area is not open, please contact Brian Miller or any of the RCS staff.
EQUIPMENT AND RESOURCES
IIHR maintains a diverse set of computing resources and facilities. Over the past two decades, IIHR has been at the forefront of HPC parallel applications, moving from several large Silicon Graphics Power Challenge Array shared memory systems, a Sun Microsystems distributed memory system, to the current large node distributed memory systems. Our codes are implemented on Nvidia Kepler/Xeon Phi highly parallel systems and within various cloud computing environments.

The Argon cluster is the primary central HPC resource after the recent retirement of our initial HPC systems, Helium and Neon. The system comprises more than 600 compute nodes with over 15,000 processor cores, 112 TB of memory, and over 110 GPU accelerators. Argon has an internal high-performance message-passing network (Infiniband and Omnipath), and the system is networked by trunked high speed 10Gb Ethernet links to the Internet2 and BOREAS networks.

Argon is managed so that investor queues are quickly made available to members of the investors’ group. When idle, these resources are released for use by others. This system has worked out very nicely and will continue to be the model for UI HPC resource sharing.

ARGON CLUSTER
The latest HPC system, Argon, came online in January 2017. Like its predecessors, Helium and Neon, Argon is jointly operated by IIHR, ITS, and a collaborative group of researchers from around the university. Argon is a shared system with, currently, more than 600 compute nodes, ~15,000 processor cores, 112 TB of memory, and over 110 GPU accelerators — 21 machines with Nvidia P100 accelerators, 2 machines with Nvidia K80 accelerators, 11 machines with NVidia K20 accelerators, 2 machines with Nvidia P40 accelerators, 13 machines with 1080Ti accelerators, and 18 machines with Titan V accelerators.

RESOURCES, EQUIPMENT, SERVICES, AND SOFTWARE
The following is a description of the other major computing resources, equipment, services, and software available to all IIHR affiliates and students.

- IIHR operates several large-scale data harvesting and processing systems related to flood sensing and modeling. The Iowa Flood Information System (IFIS) collects LDM and other weather data and builds a sequence of products for later modeling. Raw data packets are ingested on one system and passed to another system for processing and storage in a database. A third system provides web-based access to these data products. Similarly, a network of bridge-mounted flow sensors supply data to servers that are handled in a manner similar to the IFIS network. This architecture has proven scalable and reliable.

- HPC at IIHR is augmented by 18 Silicon Mechanics storage units providing 750 TB of storage in a RAID 60 configuration. This storage space is replicated to an offsite location with hourly snapshots taken for user-invoked file recovery.

- Very large-scale computations are done at national and international computation centers accessed through longstanding IIHR-center relationships. In addition to the NSF and DOD/DOE centers (e.g., NCSA, Argonne National Labs), IIHR has developed a continuing collaboration with the National Center for High Performance Computing (NCHC) in Taiwan.

- Fifty-seven Linux workstations and more than 300 individual PCs running MS Windows 10 support the local centralized facilities. Thirty PC-based servers handle web, ftp, security, and specialized database services. Most of the servers
are virtualized using VMWare hosts at IIHR and the College of Engineering (CSS). In addition, a number of user-located storage devices, publication-quality color printers, scanners, cameras, and other peripherals are in use.

This hardware is complemented by a carefully selected set of public domain, commercial, and proprietary software packages, including Tecplot, Gridgen, Fluent, FlowLab, Matlab, Origin, ERDAS, ERMapper, ERSI, Skyview, and the core GNU utilities. Additionally, software such as AutoCAD, MS Windows, MS Office, OS X, Mathematica, IDL, SigmaPlot, and SAS are used under university-wide site licenses.
RESEARCH COMPUTING SUPPORT

MARK WILSON
Principal Engineer, Director of Research Computing
425A SHL 335-5223
mark-wilson@uiowa.edu

- Administers all research-oriented computing at IIHR, including experimental data acquisition design, computation, assistance with complex computational fluid dynamics (CFD) flow models, and systems and network administration. Supervises research computer support staff and student technical assistants.

BRIAN MILLER
Senior Systems Administrator
425F SHL 335-5321
brian-s-miller@uiowa.edu

- Designs, installs, and configures networked computing systems, including administration, security, and maintenance of hardware and software. Maintains operating system software and user account management in a blended Windows, Linux, and Mac OS environment.

ERIC PRILL
Systems Administrator
425-3 SHL 335-6794
eric-prill@uiowa.edu

- Assists in the design, installation, and configuration of networked computing systems, including administration, security, and maintenance of hardware and software. Maintains operating system software and user account management in a blended Windows, Linux, and Mac OS environment.

LEXIE KING
Applications Developer
425-1 SHL 335-6272
lexie-king@uiowa.edu

- Develops web-based database applications to support IIHR research and internal operations, and provides maintenance and support for these applications, as well as managing web presentation of information.
Dear New IIHR Students and Staff,

I would like to sincerely welcome you to IIHR, and I hope your work here will be successful and rewarding. IIHR provides staff and resources to assist and support your research activities. Our goal in IIHR Engineering Services (IES) is to provide high-quality resources that will play a key role in your success as students and researchers. Please take a few moments to read the following information regarding the use of our shops and facilities. These guidelines and policies are designed to ensure a safe, organized, and professional work environment for all who work, study, or conduct research using the facilities and/or assistance of the IES staff.

For more information, please visit our website: www.iihrengineering.com. Please don’t hesitate to contact me with any questions you may have. I look forward to meeting you and assisting with your research needs.

Sincerely,

Troy Lyons
Director of Engineering Services
519 SHL
335-5319
troy-lyons@uiowa.edu

OVERVIEW

IES staff support IIHR research and educational activities in our laboratories, as well as in the field. Staff develop, construct, and maintain research apparatus, equipment, models, and facilities to support IIHR’s educational and research mission. Staff strive to achieve these goals in the most responsive, accurate, efficient, and cost-effective means possible.

Key resources included in the IES group include IIHR’s Mechanical, Electronics and Machine Shops, located in the South Campus annexes. The IES group currently employs 11 full-time staff and several undergraduate student employees. Please visit the IIHR website for a complete list and description of the facilities:

- https://iihrengineering.com/resources/facilities
MECHANICAL SHOP HOURS
7:30 AM – 5 PM, Monday – Thursday
7:30 AM – 4:30 PM, Friday

IIHR buildings are open during these work hours, but must remain locked at all other times. Doors must not be unlocked or propped open outside stated working hours.

SAFETY
IIHR takes the safety of students, staff, and faculty very seriously. Due to the ongoing construction for research projects in many of our laboratories, safety precautions are paramount. Mandatory training to operate lasers, power equipment, forklifts, scissors lift, trailers, boats, etc., is required for all students, faculty, and staff who will be using the equipment. Due to safety and liability concerns, much of the equipment cannot be used by students without proper training and direct supervision of shop staff. Contact Brandon Barquist regarding permission to use equipment and required safety training.

VEHICLES
IIHR maintains a variety of vehicles for the use of faculty, staff, and occasionally students. Vehicle requests should generally be directed to Laura Myers (IIHR main office) or Brandon Barquist (Mechanical Shop), depending on the vehicle requested. IIHR vehicles may be used for authorized IIHR business only.

LABORATORY MANAGEMENT
IIHR staff manage several campus labs. They oversee lab safety, maintain and troubleshoot advanced analytical instruments, train users to operate equipment, and formulate protocols for research instrumentation. Students needing support involving analytical instrumentation for their laboratory research activities should contact Deb Williard.

EQUIPMENT AND RESOURCES
For the convenience of Mechanical Shop personnel, equipment and tools are kept in unlocked, unsecured areas of several IIHR buildings. Although it may appear as if these tools are available for anyone to use, this is not the case. The following is intended to clarify the uses, purposes, and procedures related to IIHR Mechanical Shops resources.

HAND AND POWER TOOLS
Only Mechanical Shop personnel are allowed to use power equipment. Many Mechanical Shop machines can amputate a limb if used improperly. The hand tools, while much safer to use, are generally not “loaned out.” The shop has hand tools that are dedicated to student and/or researcher use wherever needed in our facilities. If these tools do not seem to be available, or if special tools are required, talk to Mechanical Shop Supervisor Brandon Barquist.
PUMPS
Start-up, shut-down, unattended operation, maintenance, high voltage—many types of pumping equipment are available, each with its own peculiarities. While some pumps can be used unattended, others cannot. Some are simple to operate, and others are complex. All pump operations should be reviewed with Brandon Barquist prior to use.

ELECTRICAL POWER
Building electrical supply, overloading, interruptions, locations, ground fault interrupters—electricity and water do not mix. Please discuss power usage with Electronics Shop Manager Diem Nguyen if your needs exceed what is required to light your work area or operate your computer. Annually, the fire marshal cites IIHR for any improper use of electrical power near wet areas.

PROTOCOLS
Income from research grants and contracts funds IIHR Engineering Shops & Services, their personnel, and supplies/equipment. The shop receives no state funding. Therefore, an IIHR account number is required for almost any work done in the shop. Time and materials will be charged to this account number.

PROTOCOL FOR SHOP REQUESTS
- Task requests must be approved by the student’s advisor or the project PI.
- Task requests should be directed to Brandon Barquist.
- Shop staff require drawings and/or sketches, or at minimum written descriptions of the requested work.
- Shop staff and the work requester must come to an agreement on the maximum charge and completion time frame for the task or project.
- The requester should clearly communicate any specific or unusual requirements.

USE OF SHOP MATERIALS
The shop keeps a large inventory of materials, fasteners, widgets, gizmos, and otherwise interesting stuff on hand for a wide variety of needs. In many cases, these items can be donated or lent to research efforts. Other items must remain available for shop use. Contact Brandon Barquist about use of these items.

BOATS
IIHR has boats and instrumentation for use in field data collection programs. The boats range from kayaks for small streams and backwater areas to large multi-engine boats suitable for large navigable rivers and lakes. Coordinate boat and instrumentation reservations through Brandon Barquist or Tony Loeser. IIHR has strict boat operator requirements and can provide a qualified boat operator with advance notice. Boat operator training, coordinated through Tony Loeser, can be provided on an as-needed basis for longer term projects.

DRONES
IIHR has drones for use in field data collection and imaging. The university requires drone operators to comply with FAA regulations. To be in compliance, a drone pilot must obtain a remote pilot certificate or be under the direct supervision of a certificate holder. Coordinate drone training and reservations through Tony Loeser, who is a certified drone pilot.

RECHARGE RATES
IIHR maintains a variety of equipment and instrumentation, including state-of-the-art survey equipment, flow meters, velocity meters, generators, boats, vehicles, trailers, field laptops, and more. Each is available for lease to projects on a first-come, first-served basis. The revenue generated by the use of this equipment helps keep existing equipment in good working order, update equipment as needed, and invest in additional equipment. See Tony Loeser or Diem Nguyen regarding rates, reservations, and use of the equipment.
IIHR ENGINEERING SERVICES

TROY LYONS, MS, PE
Principal Engineer,
Director of Engineering Services
519 SHL  335-5319
troy-lyons@uiowa.edu

- Directs engineering support services related to design and conduct of hydraulic model studies, laboratory research, and fieldwork. Serves as PI on numerous projects and contracts. Oversees IIHR facilities.

BRANDON BARQUIST
Engineering Specialist,
Mechanical Shop Manager
5 HMA  384-3273
brandon-barquist@uiowa.edu

- Coordinates personnel and resources related to the design and construction of specialized flumes and physical models for IIHR research projects. Also supervises the construction of laboratory equipment and maintenance of IIHR facilities.

TONY LOESER
Water Resources Engineer
309 TH  353-0739
tony-loeser@uiowa.edu

- Provides engineering support for a wide variety of research projects. Specializes in physical hydraulic modeling and river surveys. Expert in GIS, LabVIEW, and other engineering data software programs. Also oversees IIHR’s survey equipment and boat instrumentation.

DIEM NGUYEN
Electronics Shop Manager
17 HWTA  335-5758
diem-t-nguyen@uiowa.edu

- Provides support for development and application of electronics and instrumentation. Also oversees IIHR’s equipment inventory and laser safety program.
JASON KNOX
CAD Drafter/Designer
HWMA Loft 335-6087
jason-knox@uiowa.edu
- Provides drafting support for laboratory model construction, instrumentation design, and support for CNC machines. Specializing in 3D drawings using Creo (ProE) and SolidWorks.

RICK SAEUGLING
Engineering Assistant
1 HLMA 335-5245
richard-saeugling@uiowa.edu
- Provides general support for laboratory model construction, including welding, carpentry, and metal-working.

DEB WILLIARD
EES Laboratory Director
4105 SC 384-2051
deborah-williard@uiowa.edu
- Provides oversight and support of IIHR’s environmental research laboratories, including maintenance of advanced analytical instruments, training, and safety.
CELEBRATING OUR CENTENNIAL
1920–2020

IIHR—Hydroscience & Engineering