



From the Chancellor

It is an honor once again to congratulate the Illinois Fire Service Institute (IFSI) on another successful year in training those who are responsible for the safety of all the citizens of Illinois – and far beyond. Fire service professionals in Illinois, nationally and internationally depend

on IFSI to meet their training and their educational needs. It is a commitment the IFSI has carried out now for 90 years.

As the state's flagship campus, the University of Illinois at Urbana-Champaign shares IFSI's focus on excellence in training and education and in the power of research and information. The Institute's office and support staff, field instructors, and leadership share our commitment to excellence and service to our communities.

From Chicago to Metropolis, from Quincy to Danville, IFSI is meeting and exceeding the needs of 1st responders. The unmatched quality of this effort, sustained over decades, has brought IFSI and the university both national and international recognition as a leader in fire service training, education and research. And just like all of our top-ranked programs at Illinois, IFSI truly excels in bringing science and research together to solve real-world problems and make our lives better and safer.

It is with great excitement and anticipation that I look forward to continued advances by IFSI across the full spectrum of their statutory mission as our state fire training academy - helping firefighters do their work through training, education, information, and research.

The University of Illinois at Urbana-Champaign is proud to be home to what we believe to be the premier fire institute in the nation. I want to say thank you to the Institute's staff, partners, and students for their work and dedication.

We depend on them without hesitation in the most difficult moments of our lives and we trust them completely with the safety of our communities and of our families.



Vice President, University of Illinois Chancellor, University of Illinois at Urbana-Champaign



In FY2014, IFSI delivered training to 61,150 students.

- ♦ 1.170 different courses
- 15.329 class hours
- ♦ 469,956 student hours*
- ♦ 941 Illinois fire departments
- ♦ 85 other response organizations
- ◆ 2,361 students in officer training courses

Classes were offered in 314 locations and attended by first responders from 99 Illinois counties.

*As an affiliate of a land-grant university, IFSI is committed to fulfilling its responsibility for public outreach. In FY2014, these efforts included outreach programs to 11,753. The IFSI curriculum also engaged an annual average of 16,693 students over the last ten years in activities outside of direct delivery of classes.





Letter from Director Mortenson

I am pleased to present the 2014 Annual Report of the Illinois Fire Service Institute at the University of Illinois at Urbana-Champaign as we completed our 90th year of firefighter training.

It has been a busy and productive year. We've increased enrollment in our statewide Cornerstone courses and more than doubled the participation of firefighters from paid departments. We are continuing to expand our on-line learning curriculum and Professional Development program. Our researchers have developed key partnerships with University of Illinois departments and corporations to sponsor projects that will improve the safety and survivability of firefighters.

One of our major undertakings this year was the development of our new Leadership curriculum. Our goal is to offer innovative, consistent "cradle-to-grave" training in leadership and decision-making skills. In March, IFSI hosted a Leadership Development in the Fire Service Conference that was attended by more than 120 firefighters of all ranks. We are continuing to refine the curriculum and plan to offer pilot courses in 2015.

I want to thank all of you for your hard and dedicated work. Our mission is an important one, and we can all be proud of our success in fulfilling it. Together, we will continue working to assure that IFSI provides the best training, education, information, and research in the nation.

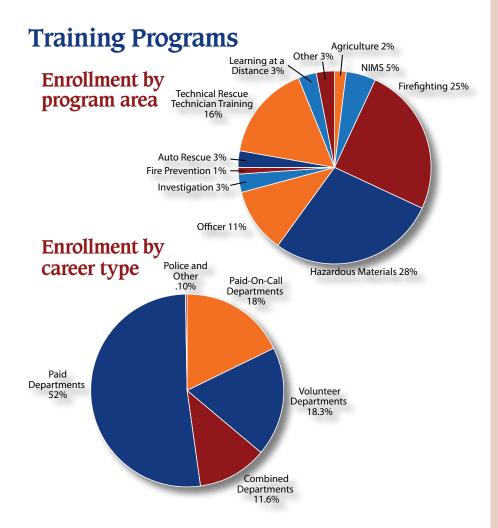
Royal P. Mortenson

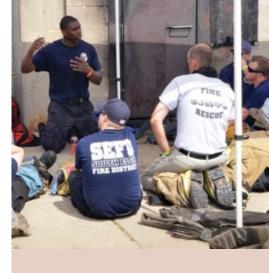
Director



Some Highlights of the Past Year

- ◆ Realized the first enrollment increase in 13 years for the annual Fire College.
- ◆ Hosted the first Leadership and Decision Making Conference and Workshop with more than 100 attendees.
- ♦ With a grant from the State Fire Marshal, hosted five Explorer-Cadet field training days for 237 participants.
- ◆ Twice brought Alvaro Llanos and Shawn Simons to campus for their "After the Fire" presentation.
- ◆ Finalized year-long effort to review, update and standardize the entire IFSI curriculum (169 courses).
- ♦ Continued expanding our training and education partnerships.
- ◆ Completed the curriculum for five one-day technical rescue technician/ hazardous materials refresher courses.
- → Hosted the Phillips 66 Corporate rescue school with participants from nine states.
- → Delivered training in 99 of Illinois' 102 counties.
- Welcomed the 3000th student to National Incident Management (NIMS) courses.
- → Trained at 941 of 1200 Illinois fire departments.





World-class staff

IFSI and its field staff include more than 400 of the top professionals in the industry. Their credentials and practical experience have brought national and international recognition to Institute programs.

Full and part-time staff teach courses on and off campus and are involved in the Institute's research activities. The heart of the staff is our field instructors who teach courses throughout the state in their individual areas of expertise. Many are active-duty firefighters and officers with years of experience that they build into classroom and hands-on training courses. Their ability to share their knowledge and engage students are the reasons that so many firefighters return to IFSI for training throughout their careers.

IFSI's Excellence in Instruction Program recognizes instructors for outstanding efforts in delivering top-quality training. Our "Instructor of the Month" honor, begun in FY2014, is awarded to individuals or teams who exemplify the spirit and mission of IFSI.

Featured Events

IFSI's flagship event – the **90th Annual Fire College** – brought
nearly 600 firefighters to Champaign
IL in June for America's oldest
continuous fire school. The four-day
event featured hands-on training
with the newest technologies
and props.

The **19th Annual Winter Fire School** offered a full weekend of training in January in Champaign.

More than 250 firefighters chose from a selection of six 4-hour short courses focused on the training needs of small and volunteer fire departments.





The 12th Explorer-Cadet Hands-On Training Fire School in June hosted more than 200 students, ages 15 to 21, and their chaperones for a four-day program of hands-on training and leadership experiences in Champaign. A special evening event featured "After the Fire."

IFSI expanded the Explorer-Cadet one-day program in 2014 by hosting 223 Explorers at five locations throughout the state – Alton, Frankfort, Galesburg, O'Fallon and Quincy IL. These one-day Fire Schools were funded by the Office of the State Fire Marshal, which provided a \$65,000 grant to support training for young people who are interested in firefighting careers.



"After the Fire" was presented twice during the year – first as part of Winter Fire School and later as part of Explorer-Cadet Hands-On training. In the early morning hours of January 19, 2000, on the campus of Seton Hall, an arson fire was started in the third-floor lounge of the six-story freshmen residence hall.

Alvaro Llanos and Shawn Simons, 18-year-old roommates at the time, were two of the most severely burned students. Alvaro and Shawn brought their story to Champaign in a dynamic presentation that included the film "After the Fire", which offered a powerful message about campus fire safety.

New classes added in FY2014

NWCG (S-359) Medical Unit Leader is a 20-hour course designed to meet the training needs of an incident Medical Unit Leader (MEDL).

NWCG S-248 - Status/Check-In Recorder is another new Wildland class being offered by IFSI. This two-day course offers a glimpse into a day in the life of the Status/Check-In Recorder.

Large Animal Rescue Awareness

was created in response to the number of large animals traveling down Illinois' roads who may be involved in emergency situations. The class introduces first responders to key elements for handing large animals such as horses, cows and pigs and covers scene management, restraint, humane treatment, and trailer rescues.

Field Training

Cornerstone Program

This outreach effort provides practical, hands-on training in fundamental skills, delivered at no cost to fire departments.

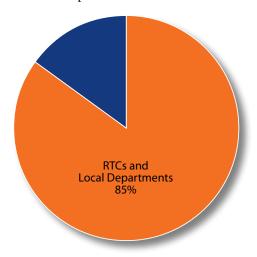
Cornerstone courses are presented throughout the state in fire departments' local facilities and at Regional Training Centers and fire schools. Aided by a solid funding commitment from the Illinois legislature, IFSI delivered Cornerstone classes to 12,212 firefighters in FY2014.

IFSI's seven regional representatives work with departments in their areas to ensure that all Illinois firefighters have access to Cornerstone training in their localities. They also help departments evaluate their needs and apply for federal grants to support training programs and equipment acquisitions.

Student Registrations

8,847 student registrations at IFSI's Champaign campus

52,303 student registrations at Regional Training Centers and local departments



More than 85 percent of IFSI training is delivered at local fire departments and Regional Training Centers throughout the state – an eleven percent increase over FY2013.

Cornerstone Delivery

526 classes 770 departments 12,212 students



Illinois Propane Education and Research Council (IPERC) Training

61 classes 280 departments 1760 students



Illinois Petroleum Resources Board Oil Well Fire Training

1 class5 departments23 students

Illinois Department of Natural Resources Wildland Training

18 classes 77 departments 345 students

Training Firefighters Where They Live and Work

IFSI connects with all the state's firefighters through our network of Regional Representatives and Regional Training Centers. Located throughout the state, the centers make it possible for firefighters to receive quality training close to their home departments. Facilities range from burn structures to rescue and HazMat training props.

Notable accomplishments

- ◆ Traveled more than 100,000 total miles to reach departments in all seven regions.
- → Trained 1760 students in LP firefighting with a grant supplied by the Illinois Petroleum Education and Research Council.
- Formed a working relationship with the University of Illinois
 Extension and the southern region to educate firefighters in Illinois' five southernmost counties.
- ◆ Reached more than 14,400 firefighters who trained close to their home departments.
- ◆ Conducted 19 acquired structure burns, including two commercial buildings, throughout the seven regions.
- ◆ Increased the number of classes held in the southwest region by 33 percent and engaged ten new departments.
- ◆ Conducted 11 live-burn "Light and Fights" at locations around the state using local and statewide assets.







"This course should be at fire chief and fire district trustee conferences!"

Firefighter after **Firefighter Rehab And Heat Stress Class** at the **Erie Fire Department**



Wildland Firefighting Highlights

The frequency and severity of wildand fires has created a critical need for realistic and hands-on wildland training for firefighters.

- → IFSI is the only wildland training program in the Midwest that uses live-fire evolutions during its field exercises.
- ◆ This last year, IFSI trained more private burn contractors and county forest preserve personnel in prescribed fire management in the Central region.
- → IFSI is also the only wildland training program that offers positionspecific training for wildfire management and leadership at the Incident Command System (ICS) level. This year, IFSI introduced two new National Wildlife Coordinating Group (NWCG) leadership classes.
- ◆ Twenty IFSI staff members are qualified to respond to wildfire events at the ICS level.
- → Through a grant from the Illinois Department of Natural Resources, IFSI continues to offer wildfire training at no cost to firefighters who serve a population base of 10,000 or less.





Learning at a Distance

FY2014 Highlights

- ♦ Following the philosophy to deliver firefighter training as a five-step process, eLearning concentrated on Step One – providing students with background materials to start the learning process before they ever see the classroom.
- ♦ With the addition of Adobe Connect software, classroom training can now be delivered in real time in electronic classrooms. The courses offer face-to-face instruction using web cams, white boards and visual presentations.
- ♦ IFSI Program Managers now have a mechanism to access training on policy and procedure, as well as information to better manage their staffs and programs.

Reaching out with social media

IFSI expanded its use of Facebook and Twitter as marketing and communication tools. Our Facebook page – www.facebook.com/fsi.illinois.edu – is constantly updated with class information, photos, news and recognition of donors. The page also features comments from students. Facebook now has more than 5800 Likes.









IFSI web site

- last year
- → 76,449 average hits per day
- ♦ 8,207,874 total page views 14% more than last year
- ♦ 22,487 average page views per day
- ♦ 424,694 total visitors
- ♦ 150,318 total unique IP addresses 20% more than last year

In FY2014, 28 online courses were delivered to 1,219 students for a total of 13,212 contact hours

TOP FIVE PAGES

Home page **Resource Center** Certificate download page **Course description pages** Course schedule page



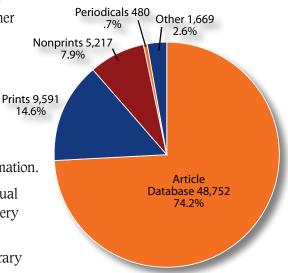
Library and Information Services

The IFSI Library is the only library in the state dedicated to fire and emergency services and is the third largest in the United States. Its growing collection is available to Institute staff, firefighters and other emergency responders, and University of Illinois students.

FY2014 Highlights

- → Increased the collection to 65,709 titles (502 more than last year).
- → Circulated 2,236 items (24% more than last year).
- ♦ Served 4,527 patrons and responded to 4,007 requests for information.
- ◆ Created an online history booklet commemorating the 90th annual Fire College with historical facts, key events and photos from every Fire College since 1925.
- Provided access to DVDs acquired through two Illinois State Library Back to Books grants totaling approximately \$10,000.

Titles in Collection



IFLODD
ILLINOIS FIREFIGHTER
LINE OF DUTY DEATHS
DIGITAL IMAGE
COLLECTION DATABASE





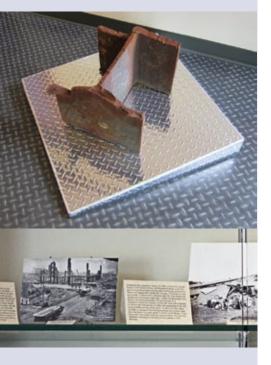
The IFSI Library maintains the Illinois Firefighter Line of Duty Deaths Database (IFLODD), the most comprehensive collection of Illinois IFLODD statistics and the only firefighter database with incident summaries, photos and oral history interviews.

Available on the IFSI web site, the IFLODD database had 11,909 unique visitors in FY2014.

- ♦ 869 firefighter records
- ♦ 667 incident summaries
- ♦ 447 images
- ◆ 14 oral history interviews

New this year was the addition of the Illinois Firefighter Medal of Honor and Medal of Valor database. The collection includes 238 records of medal recipients.









The library is part of the 21,000-square-foot Learning Resource and Research Center (LRRC).

Also included in the LRRC:

Firefighter Memorial Hall honors more than 850 Illinois firefighters who died in the line of duty since 1857. It also houses permanent and temporary exhibits related to fire service history. Included is a steel beam fragment from the Twin Towers, donated by the Port Authority of New York and New Jersey. Memorial hall is open daily to the public.

The **Emergency Operations Training Center** incorporates advanced technologies to simulate actual emergencies and Emergency Operations Command (EOC) scenarios. These capabilities are helping IFSI meet the growing demand for National Incident Management System (NIMS) training. The Center is also available to Illinois communities for staff training and testing of their emergency response plans. The space is also equipped to serve as the Campus Incident Command Post in a campus emergency.

Memorial Plaza is the brick walkway surrounding the main entrances to the LRRC and Memorial Hall. The Plaza is lined with bricks donated by individuals, businesses and organizations. The bricks are personalized with engraved messages that memorialize firefighters, honor friends and family members, and show support for the Institute's work. Bricks are regularly added to the Plaza. To order a brick, visit the IFSI web site.

Research

A Commitment to Research

IFSI continues its leadership in research to protect firefighters and advance the technologies available to them. The Institute focuses its efforts on action-oriented studies that have a direct impact on firefighters' work, health and safety.

IFSI's **Firefighter Life Safety Research Center** provides state-of-theart facilities and equipment for advanced studies. The Center is adjacent to IFSI's live-burn testing and training environments, giving researchers immediate access to individuals for observation and tested materials for laboratory analysis.

Research projects are also carried out at partner facilities on and off campus. Institute researchers collaborate with dozens of University of Illinois departments, other universities, as well as the National Institute of Standards and Technology (NIST) and Underwriters Laboratories (UL) on a wide range of interdisciplinary investigations. They include:

- → Heat stress/strain due to firefighting activities
- ♦ Psychological and cognitive function effects of heat stress
- ◆ Cardiovascular changes due to firefighting
- Biomechanics of movement following firefighting and wearing personal protection equipment (PPE)
- ◆ Evacuation of building occupants
- ◆ Firefighting PPE design and materials testing
- ◆ Combustion science and diagnostics







FY2014 Highlights

- ◆ Completed a study of the design of self-contained breathing apparatus (SCBA) and how it affects metabolic stress levels during firefighting activities. The goal is to prevent injuries caused by problems with balance, mobility and fatigue.
- ◆ Continued our partnership with the National Institute for Occupational Safety and Health (NIOSH) Division of Surveillance, Hazard Evaluations and Field Studies on a study to collect exposure data and to document hazards during structural firefighting and overhaul operations.
- Awarded three research grants from federal funding agents and partners including UL, NIOSH and NIST, totaling nearly \$2 million.
- ◆ Continued to present our research at fire service conferences, meetings, symposia and to standards organizations across the country, helping to lead national conversations on firefighter health and safety.
- 15 manuscripts published or accepted for publication in leading national and international academic peer-reviewed journals and book chapters.
- Worked with IFSI training programs from firefighting to technical rescue in order to translate science and engineering data and information to the operational needs of the fire service.







IFSI research results are featured in peer-reviewed journals.

In 2014, 15 manuscripts were published or went to press in the following publications:

- ◆ American Journal of Cardiology
- ♦ American Journal of Hypertension
- ♦ Annals of Occupational Hygiene
- ◆ Ecological Psychology
- **→** Ergonomics
- ◆ Journal of Occupational Medicine and Toxicology
- → Medicine & Science in Sports and Exercise
- ◆ Occupational Medicine

Our research has been presented at national and international scientific and Fire Service conferences, including:

- ◆ American Association of Textile Chemists and Colorists (AATCC) International Conference
- ◆ American College of Sports Medicine Annual Meeting
- → Fire Department Instructors Conference (FDIC)
- → Fire Rescue International (FRI)
- ◆ International Association of Women in Fire & Emergency Services Conference
- ♦ Next Five Years in Fire & Electrical Safety Fire Prevention Research Foundation
- ◆ Redmond Symposium International Association of Fire Chiefs
- ◆ Safety/Training Officers' National Summit
- → World Congress of Biomechanics

A Successful Partnership with Motorola

In FY2014, the Motorola Solutions Foundation has helped create more opportunities by subsidizing the tuition for Fire Academy students. Students or their departments were able to save 30-percent on tuition for each of the Academies held in FY2014. The two FY2014 Academies hosted 40 students for 14,750 student hours.





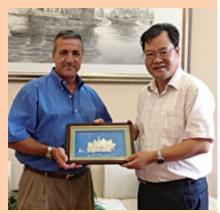


















Outreach Programs

FY2014 Highlights

In the U.S.

- ◆ Co-hosted the annual training conference of the Illinois Chapter of the International Association of Arson Investigators (IAAI), held in Champaign. The 40-hour program was attended by 125 public and private investigators from Midwest states.
- ◆ Supported the University of Illinois Engineering Open House by conducting side-by-side burn cell demonstrations.
- → The Director presented at at the Leadership Under Fire Conference in Philadelphia in October 2013.
- → Hosted the Illinois Firefighters Association's Down & Dirty Weekend Training.
- ◆ Made numerous presentations and participated in media interviews about IFSI's delivery of agricultural rescue classes.
- ◆ Director Mortenson conducted six presentations on leadership development and leading in a crisis at Illinois State Police and the Illinois Law Enforcement Training Standards Board seminars.

International

- ◆ Hosted officials from the Hong Kong Fire Services Department for two three-week HazMat training sessions.
- ◆ Conducted the tenth annual Chinese Librarians Summer Program for 26 participants. Since it began in 2005, the four-week program has trained 246 librarians from 91 libraries and other organizations in China.
- ◆ Made presentations at the Aviation Firefighting and Emergency Rescue International Seminar organized and hosted by China Civil Aviation Flight University in Guanghan, Sichuan Province. IFSI's Deputy Director James Keiken and Dr. Lian Ruan were invited to deliver addresses on emergency response management, hazardous materials response and fire information services.
- ◆ Co-sponsored and participated and presented at the 2014 inFire Annual Conference held at Sun Yat-sen University in Guangzhou, China. Director Mortenson opened the conference with a presentation on meeting the needs of the fire service in the 21st century. Dr. Ruan served as co-chair for the conference and was also a presenter.
- ◆ Invited and hosted 13 visiting scholars from Chinese universities. The University of Illinois' China Endowment Fund, which supports scholars and researchers that visit the campus, received \$4,240 in donations from the group.
- → The China Endowment Fund awarded its third scholarship award to Deputy Director Dr. Yuhong Cui, Beijing Institute of Technology on studying research data management in University of Illinois at Urbana-Champaign.
- Received a Distinguished Contribution Award from the International Studies & Programs of the University of Illinois and the Chinese Academic and University Library Association, Library Society of China.

Expanding Collaboration with the Chicago Fire Department

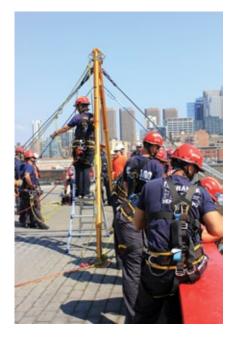
One of IFSI's most successful collaborations has been with the Chicago Fire Department (CFD). The institute engaged with CFD more this year than in previous years and sponsored more training events and other projects in the city and on the Champaign campus.

In FY2014, our instructors delivered officer training courses to leadership at CFD: 55 lieutenants, 12 captains, five battalion chiefs and 12 field chiefs.

FY2014 programs that were developed and carried out by IFSI in Chicago include:

- ◆ An Intensified Fire Officer Promotion series of classes for more than 80 newly promoted lieutenants, captains, battalion chiefs and Emergency Medical Services field chiefs. The classes included NFPA 1021 Fire Officer certification and NFPA 1521 Incident Safety Officer.
- → Implementation of a new curriculum of management and leadership training for three ranks of paramedics in the CFD.
- Delivery of two Rapid Intervention Technical Rescue classes with 72 students.
- Presentation of continuing-education classes in Vent Saw Training (510 students), Tower/Ladder Operation (210 students) and Emergency Medical Response to WMD & All-Hazard Incidents (364 students).
- Presentation of TRT Core courses in Vertical Rope Rescue, Confined Space Rescue, Trench Rescue and Structural Collapse Rescue for CFD's Special Operations Unit (468 students).
- ◆ Monitoring of 2500 CFD members participating in the Physical Fitness Incentive Program.







Strategic Partnerships



IFSI's many strategic partnerships allow us to share knowledge and resources with leading educators, researchers, corporations, professional associations and other organizations. Current partners and their contributions include:



- → Illinois Fire Chiefs Association support of leadership curriculum development.
- → Illinois Firefighters Association funding and delivery of CD training software for use by local fire departments.



 Illinois Association of Fire Protection Districts – participation in trustee programs to promote training opportunities and availability, plus financial support for classes.



◆ Illinois Propane Education and Research Council (IPERC) – delivery of no-cost training in fighting propane fires.



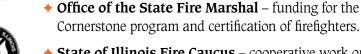
→ Illinois Petroleum Resources Board – funding for training to extinguish oil-well fires in southern Illinois.



→ Illinois Department of Natural Resources – training for firefighters and others to respond to extensive and specialized fires in a wildland or urban environment and to qualify for red-card certification.



 University of Illinois at Urbana-Champaign – cross-campus initiatives to support interdisciplinary research and academic programs.





◆ State of Illinois Fire Caucus – cooperative work on strategic public policy issues.



 Underwriters Laboratories – joint sponsorship of fire-related research and product field trials.



Chicago Fire Department (CFD) – projects in four key areas: training, education, research and translating "science to the street." CFD is also a partner with IFSI in research projects with Underwriters Laboratories. The studies involve work by IFSI personnel who gather particulate matter from smoke in actual fires.

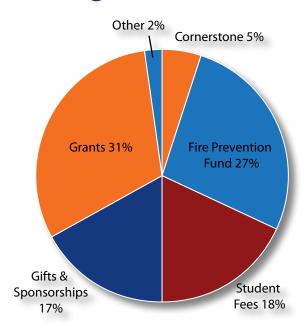
Corporate Relations

Hands-on training is the signature of IFSI, and it's a commitment that requires extensive resources. As our services and course enrollments increase, the need for additional funding becomes more critical. Our ability to respond to new firefighting challenges depends on the continuing support of Illinois fire departments, state agencies, private donors and grants.

Generous support from business partners

More than 60 companies and organizations throughout Illinois have supported IFSI with monetary and in-kind donations. The companies range from small fire service equipment suppliers to large research-based organizations – from insurance companies to financial institutions. Some of our partners focus their contribution on specific programs and other support IFSI in general terms. IFSI's agriculture training program is supported by a number of ag-related businesses; our vehicle and machinery rescue training programs are supported by the auto industry and various auto-related entities.

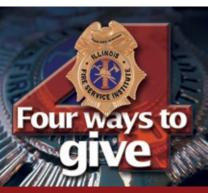
Funding Sources



Every dollar makes a difference.

IFSI takes pride in guaranteeing that 100 percent of all donations are used to directly support our firefighter training, research and education programs.





Four funds have been established to support the delivery of firefighter training at IFSI.

The **IFSI Fund** is a general-use fund for training, education and instructional services.

The **Ag Rescue Training Fund** is an endowed fund that directly supports the agriculture rescue curriculum.

The **Firefighter Life Safety Research Fund** is an endowment that support human and equipment applied research.

The Learning Resource and Research Center Fund supports the physical aspect of the library, research laboratories and Firefighters Memorial Hall, as well as the outside Memorial Plaza.





Royal P. Mortenson

Director (217) 300-0229 rpmort@illinois.edu

Jim Keiken

Deputy Director (217) 300-4275 jkeiken@illinois.edu

John (Mac) McCastland

Associate Director (708) 906-6927 jmccastl@illinois.edu

Brian Brauer

Associate Director (217) 333-9027 brbrauer@illinois.edu

Sheri Ellenberger

Finance and Business Operations Director (217) 300-5831 ellenber@illinois.edu

Terri Hopper

Executive Assistant to the Director and Director of Class Support (217) 244-7131 hopper@illinois.edu

Sean Burke

Assistant Director for Firefighting Programs (217) 244-8720 swburke@illinois.edu



Illinois Fire Service Institute's mission:

To help firefighters do their work through training, education, information and research.



Illinois Fire Service Institute

11 Gerty Drive Champaign IL 61820 (217) 333-3800 Toll-free (800) 437-5819 FAX: (217) 244-6790

Email: fsi@illinois.edu

www.fsi.illinois.edu

@ 2014, University of Illinois Board of Trustees

