CIVIL & ENVIRONMENTAL ENGINEERING

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Building the FUTURE one CIVIL ENGINEER at a time.
Greetings from the New Dean

Hello alumni and friends of the Department of Civil & Environmental Engineering and the Speed School of Engineering. These are exciting times for the University of Louisville and the Speed School of Engineering. As most of you now know, UofL is under new management with the appointment of President Neeli Bendapudi as its 18th president. She brings optimism and dynamism and is the highly experienced and competent leadership that UofL needs to advance in its educational mission. It is my pleasure as the new Dean of the SSoE to serve under her leadership.

As Dean, I am committed to working with the other administrators, faculty, and staff to make gains in both our undergraduate and graduate engineering education. Due to the efforts of our strong undergraduate recruitment team, we just had our largest freshmen class (530 students) and we are striving to raise our graduation rates and increase the experiential learning opportunities for our students. Equally as important, we are making internal changes to enable our faculty to be even more productive in graduate education and research.

An important member of our SSoE administrative team is the Chair of the Department of Civil and Environmental Engineering, Dr. Zhihui Sun. It was my pleasure to officially appoint her to this position soon after my own appointment. I have found her to be high achieving as a teacher and researcher, and reliable and proactive as a department chair. I expect this department to thrive under her leadership.

I hope to meet many of you and communicate with you again in the future.

Emmanuel Collins
Dean
Richard Chilton was presented the Professional Award in Engineering (PAE) for Civil Engineering during the 2017 Speed School Homecoming celebration held October 13 at the Brown Hotel.

The award is based on outstanding career performance in engineering; exceptional efforts by an individual to foster the professional development of young engineering college students; exceptional ability in the planning and direction of significant and important projects in technical engineering; and individual contributions to technical engineering knowledge.

Chilton and his brother Mark, both grew up in Louisville and earned their degrees at the Speed School. Together, they helped shape their family's evolving construction business, a company whose first project was plowing victory gardens during WWII. The Chilton family's first campus excavation project was for the civil engineering building in 1956.

He entered the Speed School in 1960, when it was still described as a “street car college,” and took his first classes in that same new civil engineering building. By 1972, Chilton had added his Master's in Civil Engineering from UofL, as well as an MBA from the University of Kentucky.

The brothers went on to form RAM Engineering and Construction, where they have participated in over 80 construction projects on the university's campuses since 1956. That includes, perhaps most notably, the RAM site development contract for the UofL Cardinal Stadium.

Now, when driving through campus, Chilton's impact is apparent among his contemporaries, a legacy built on 61 years of subtle changes to the University's landscape. These changes have produced the University of Louisville as it is today, a modernized campus renowned in the region.

Chilton is blessed with the love and support of his wife and family, who support him in his ongoing search for the next below ground adventure, while reminding him that life is about love and relationships.

Alumnus Jeff Schuchter is KSPE Young Engineer of the Year

Reprinted from Kentucky Engineer magazine, Winter 2018 edition

Jeff Schuchter, P.E., of the Northern Kentucky Water District, has been awarded the Young Engineer of the Year Award from the Kentucky Society of Professional Engineers. Jeff received both a Bachelor's of Science and Master's Degree in Civil Engineering from the University of Louisville and a Master of Business Administration from Northern Kentucky University. Jeff is a licensed engineer in the State of Kentucky.

Over the course of his professional career, Jeff has routinely demonstrated technical expertise and professionalism in his many roles at the Northern Kentucky Water District. Jeff started as a staff engineer in 2006 and is now an engineering manager, managing the infrastructure and maintenance department. His passion for civil engineering and leadership skills has been demonstrated through the planning, design, and implementation of numerous projects for the Northern Kentucky Water District.

Jeff's experience ranges from hydraulic analysis, construction inspection, operations, and project management to capital planning and budgeting. Jeff is thankful for the roles he has been entrusted and strives to promote continuous improvement and is driven to find the best solution to every challenge he faces. He is thankful to be surrounded by such great co-workers and continues to learn from their experience.

Jeff is actively engaged in the Northern Kentucky Society of Professional Engineers, serving in positions as Board of Director, Vice President, President, State Director, and currently serves as Secretary. Jeff is also active with the American Water Works Association, where he is chair of the Kentucky/Tennessee Section's Non-revenue Water Committee.

Jeff resides in Campbell County, Kentucky with his wife Maria, and two boys, Ben and Sam.
Our MSCE Online program was ranked as one of the Best Online Master’s in Civil Engineering Programs in 2018 by TheBestSchools, a member of National Association for College Admission Counseling. University of Florida was ranked #1, followed by University of Virginia and the University of Illinois at Urbana Champaign. University of Louisville was ranked #14. Our program was highlighted by the diverse topics covered. The online course inventory has been expanded greatly in recent years to cover Transportation Engineering, Structural Engineering, and Water Resources.

The program requires 30 credit hours to complete, and gives students 6 elective hours to pursue their interests through other graduate-level courses.

**Admission Requirements**

- Complete graduate application
- Bachelor’s Degree in Civil Engineering
- Official transcripts
- GPA of 2.75 or above (on a 4.00 scale)
- Two letters of recommendation

For more information, please contact:

Leigh Ann Elles, 502-852-4415, Leigh.elles@louisville.edu

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<tr>
<th>Courses</th>
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<tr>
<td>CEE 522</td>
<td>Fundamentals of Prestressed Concrete</td>
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<td>CEE 523</td>
<td>Timber Design</td>
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<td>CEE 560</td>
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<td>CEE 562</td>
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<td>GPS Theory and Application</td>
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<td>CEE 565</td>
<td>GIS Applications to Transportation</td>
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<td>CEE 573</td>
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<td>Environmental Analysis of Transportation Systems</td>
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<td>Airport Planning and Design</td>
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<td>CEE 694</td>
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<td>CEE 694</td>
<td>Wetland Design</td>
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Dr. Robert Kluger joined the University of Louisville Department of Civil and Environmental Engineering in July of 2018. He is focused on cutting-edge research in transportation systems, focusing on safety, operations, and technology. Prior to his faculty appointment at the UofL, Dr. Kluger worked as a post-doc at the University of Arizona in Tucson, AZ. He received his bachelor’s degree from Georgia Tech and both his master’s degree and doctorate from the University of Virginia. He is originally from Cincinnati, Ohio.

Kluger hopes to bring technology to roads in Louisville and the surrounding region. Transportation technologies can be used to improve many aspects of the transportation system and research is ongoing to fully understand range of applications. Transportation technology can broadly be broken into two categories, existing, and emerging, and can refer to in-vehicle technologies or roadside technologies. While many may be familiar with the in-vehicle technology associated with new vehicles due to publicity from auto manufacturers and OEMs, the roadside technology is what provides system-level benefits to regional mobility.

There are a variety of uses for roadside technologies. One of the most visible uses is the detection of traffic at signalized intersections. Traffic signals without the ability to detect traffic operate on a “pretimed” plan, meaning that the traffic signal is unable to adapt to the surrounding traffic conditions. The result is often many vehicles stopped at one approach while the other sees a green without any vehicles, which is what traffic engineers refer to as “lost time.”

However, if a traffic signal is equipped with detection, it can be programmed to realize that no vehicles are using the green and reallocate the time to waiting vehicles. Examples of existing detectors include inductive loop detectors, RADAR, and video image processors. Emerging detection technologies are able to recognize cyclists and pedestrians as well, however this is an area that requires further research to accurately identify the presence of pedestrians and determine when the pedestrian has cleared the intersection.

Kluger intends to test advance technology and develop partnerships with local transportation agencies to deploy detection technology in the surrounding region.

Traffic operators need to know what is occurring on the system they operate to identify areas of improvement. One example of a performance measure is the travel time between two points. Travel time is critical for the dissemination of traveler information, evaluation of system congestion (both recurrent and non-recurrent), and in developing regional transportation improvement plans.

Numerous other performance measures either exist, or can be developed, to evaluate regional mobility, safety, air quality, transit and freight performance, and more. The roadside sensor required depends on the performance needs and some of these measures can even be obtained through in-vehicle technologies as well. The best performance measures require second-by-second data collected by sensor technologies throughout the road network. With the data-infrastructure in place, it is very difficult to quantify the system performance.
Civil Engineering Program Mission and Program Educational Objectives

Our Mission
The mission of the Department of Civil and Environmental Engineering is to serve the university, the Commonwealth of Kentucky, and the engineering profession by providing high quality educational programs to all students; engaging in research and scholarship that will extend knowledge; and assisting the economic development of the regional, state, and national economies through technology transfer.

Program Educational Objectives
In accordance with our mission statement, within three to five years of graduation:

• Our graduates will grow from technical competency to professional proficiency.
• Our graduates will engage in professional development and lifelong learning.
• Our graduates will exhibit leadership and team-building skills.
• Our graduates will provide service to the profession, and to society.

2017 Selected CEE Department Publications

Referred Journal


Conference Proceedings/Presentations


The UofL American Society of Civil Engineers Student Chapter took home second place this year at the annual Regional ASCE Ohio Valley Student Conference in Athens, Ohio. Held the weekend of April 12th-14th, the Speed team included Abby Miles and Jeremiah Partin, both juniors in Department of Civil and Environmental Engineering. The team participated in a number of the events this time, including the surveying and concrete bat competitions. The team took this year to regroup on the concrete canoe project, another popular competition at the ASCE meeting, focusing instead on the concrete bat project, which ultimately yielded a second place victory, as well as plenty of practical field experience working with the material.

**Practice Swing**

The competition features around 430 students from 15 colleges, features rules for the competition which includes length and material density parameters, taking the practicality of the object along with the aesthetic design into equal consideration. The length of the bat is set between 27 and 35 inches, with a maximum half an inch amount of rebar, which requires an additional half an inch of concrete around it for safety reasons. The Speed Team went with a bat length of 33 inches with a total weight of about 5.12 lbs.

According to Partin the bat weighed about equal to two regulation bats.

In addition to aesthetic and design requirements, the bat needed to work. Team members lined up to hit a softball off of a tee, garnering points based on how far the ball traveled. At bat was Miles, who managed to land within the top three in terms of distance achieved, hitting the ball around 156 feet, the equivalent of an outfield hit.

**Earned Run Average**

Both Miles and Partin, who have remained part of the ASCE Speed team for several years, look forward to their next opportunity. They see their second place victory as a starting point, not the end, but maintain an optimistic attitude towards their experience as a chance to learn.

Partin explains, “With both the concrete canoe and this bat, our designs were solid. We didn’t win any of the races. With our concrete bat, we had a very light design, but we didn’t achieve any of our goals.”

Miles pulled equally from their work on the concrete canoe to build this year’s bat. She says, “We’ll go back next year. We had a really good concrete design (last year), but I think that could be improved.”
The summer of 2018, the J.B. Speed School of Engineering initiated their first-ever engineering-focused International Service Learning Program. Led by Dr. Thomas Rockaway from the Civil and Environmental Engineering Department, students from Civil, Mechanical and Chemical Engineering worked together to help address irrigation system challenges in the farming community of Sacclio, Peru. Through a 10-week course, culminating in a 17-day in-country experience, the students worked to identify, prepare, and complete a digital mapping project of the original Incan irrigation systems.

During their class, the University of Louisville students, working with local farmers through Skype, learned that the Sacclio farmers are using irrigation channels originally constructed by the Incas in the 1400s, and modernized by the Peruvian government in 1985. Unfortunately, the channels are deteriorating and ultimately may not provide the necessary water resources. Without sufficient water, agricultural crops are stressed, reducing their production, the available food for the community and the farmers’ livelihoods.

The farmers consistently work to preserve their water supply and maintain their irrigation system. Every two months, the community members participate in work days to clean the canals and perform critical repairs. Additionally, select work teams respond quickly to any emergency repairs that are needed. However, there are no records kept or documentation of the system. Any information regarding the canal system is only maintained through the collective knowledge of the community.

As the canals continue to deteriorate and water resources become more scarce, it is clear that larger canal refurbishment projects will be required. In order for the community to make good decisions on where and how to repair their systems, they need good information. Thus, the students determined that it would be essential to prepare a detailed map of the existing irrigation network. A detailed map would also fulfill a secondary function because the Peruvian government has recently declared that detailed maps are a prerequisite to qualify for irrigation infrastructure repair funds.

To complete the mapping project, the students identified a variety of surveying techniques that could meet their goals. After much consideration, they selected an iPad-based Geographical Information System (GIS) augmented with high accuracy GPS units. With this equipment, they could work to not only develop a map of the irrigation channels, but also to create a digital database with photo references for valves, channel condition and other critical features.

The students successfully mapped 347 acres containing 4.9 miles of canals, over 500 distinguishing feature locations (valves, drops, deterioration), with over 1,500 photos. This information was transferred to a locally based non-profit, the Andean Alliance for Sustainable Development, who can manage the digital mapping and works with the community to design and implement new projects.

In addition to the field mapping, the students also had the opportunity to visit other communities and review their irrigation systems. The students also visited the hot springs of Lares, the waterfalls of Yucay, and the Inca ruins of Machu Picchu.

Overall, the first-ever engineering-focused ISLP trip was a success. The students were able to use their engineering skills to create a digital map that will be a significant benefit to the Sacclio community. More trips are planned to initiate mapping projects in different farming communities and to expand our understanding of the Sacclio systems.
Out of a total 1800 applicants, Civil and Environmental Engineering junior Raychel Bahnick was one of twenty students awarded the TE Connectivity Excellence in Engineering Scholarship. Sponsored by Society of Women Engineers, this scholarship is designed to grant full-time engineering students from underrepresented backgrounds $5,000 in financial relief. In order to qualify, applicants have to demonstrate a number of strengths, from administrative details like their GPA, to an essay enumerating their interests in engineering.

Civil and Environmental engineering senior Christopher Bird was selected as the recipient of American Institute of Steel Construction (AISC) and Southern Association of Steel Fabricators (SASF) scholarship in the amount of $2,500. AISC also picked Chris as the recipient of AISC Educational Foundation scholarship in the amount of $2,500. In Spring 2018, Mr. Bird was also recognized by Structural Engineers Association of Kentucky to receive a $2,000 scholarship towards 2018-19 school year. Chris has moved on to his MEng degree at our department. He chose Structural Engineering as his focused area.

CEE undergraduate research assistant, Samantha Crowder and Ph.D. student Song Wang, have won the 1st and 3rd Place Awards, respectively in the 2017 International Highway Engineering Exchange Program (IHEEP) Educator and Student Participation (ESP) Student Competition. Both students are under advising of Dr. Richard Li.

The IHEEP ESP competition was a two-round international competition. Students from different institutions across the U.S. and some European countries first submitted abstracts of their research to the IHEEP program. Five students were selected as finalists to attend the IHEEP annual meeting and present their research. The top three presentations were finally chosen to receive the first, second, and third place awards.

Song’s presentation was titled “In-Vehicle Road Departure Avoidance System at Horizontal Curves based on Connected Vehicles Technology.” Samantha’s presentation was titled “Fuzzy Logic Modeling of Dilemma Zone Based on the High-Resolution Radar Sensor Data.” She is advanced to Master of Engineering in 2018-19 school year.
2018 Honors & Awards

Civil Departmental Alumni Award
Hunter Boggs

This cash award and certificate is presented by the Speed School Alumni Association to outstanding Graduate/Professional Students nominated by each department.

Co-op of the Year Award in Civil Engineering
Elizabeth Lykins

This award recognizes an outstanding student who has successfully completed a co-op and nominated by his employer and/or a faculty. Evaluation is based on student's statement about the co-op experience and the student contribution to the employer.

Hazelet & Erdal Scholarship
Sydney Harper

The Hazelet & Erdal consulting firm (now BRW) established an endowment for this scholarship for a student majoring in Civil Engineering. It is awarded on the basis of academic merit and/or financial need.

Charles Cunningham Scholarship
Christopher Bird

The Charles Cunningham Endowment provides a scholarship to a Civil and Environmental Engineering student who exemplifies values and qualities promoted by the benefactor.

Kentucky Section ASCE Scholarship
Abby Miles

The Kentucky Section of the American Society of Civil Engineers presents this scholarship to a professional school student in Civil Engineering who demonstrates superior service to the student community.

Kentucky Section ASCE Scholarship
Marcus Pritt

The Kentucky Section of the American Society of Civil Engineers presents this scholarship to a professional school student in Civil Engineering who demonstrates superior service to the student community.

CEE Undergraduate Recognition Award
Kimberly Carbaugh

This award recognizes the graduating student earning the Bachelor of Science in Civil Engineering and takes due consideration of academic excellence, contributions to the department and the school, and potential for future achievement.

CEE Undergraduate Recognition Award
Samantha Crowder

This award recognizes the graduating student earning the Bachelor of Science in Civil Engineering and takes due consideration of academic excellence, contributions to the department and the school, and potential for future achievement.

F. W. Schoettler Scholarship
Maria Kolisnichenko

The F. W. Schoettler endowment provides a scholarship to the Civil Engineering student with the highest G.P.A. entering the Master of Engineering program.

Life Takes Engineering
louisville.edu/speed/civil
Fall Networking and Recruiting Event held at University Club

The following companies attended the 2018 civil networking and recruiting event on September 12 at the University Club to meet with students about co-op and part-time and full-time employment opportunities.

- American Structurepoint, Inc.
- ATC Group Services
- Burgess & Niple, Inc.
- C&I Engineering
- CFW Associated Engineers
- Clark Dietz
- Connico Incorporated
- Dant Clayton Corporation
- Illinois Department of Transportation
- Indiana Department of Transportation
- KPFF Consulting Engineers
- LECGI INC.
- LG&E and KU Energy
- Lochmueller Group
- Louisville Paving Company
- MAC Construction & Excavating, Inc.
- Messer Construction Co
- Patriot Engineering & Environmental
- Preload, LLC
- Qk4
- S&ME, Inc.
- Stantec
- Strand Associates
- The Kleingers Group
- Troyer Group
- Turner Construction
- UofL Kentucky Pollution Prevention Center (KPPC)

Dr. McGinley will be recognized as a Fellow Member of TMS at the October 2018 Annual Meeting in Cleveland, OH.

The Masonry Society’s Board of Directors, based on a recommendation from its Awards Committee and a strong nomination package, has named W. Mark McGinley, Ph.D., P.E., Professor and Endowed Chair for Infrastructure Research at the University of Louisville, as a Fellow of the Society. Dr. McGinley was nominated for the position of Fellow based on his significant contributions and achievements related to masonry education and research. Dr. McGinley is a noted masonry educator and researcher, having won several awards for his work including the John B. Scalzi Research Award in 2012 from The Masonry Society as well as an outstanding TMS Journal Paper Award.

His contributions to a research project focused on the seismic behavior of low-rise reinforced masonry structures and on the seismic behavior of masonry veneer over wood-stud walls and masonry walls led to him receiving the Yorkdale Award from ASTM. He has also been recognized with the Award of Merit and Fellow award from ASTM, along with the Gil Robinson Memorial Award. He is currently Chairman of ASTM C12 Committee on Mortars and Grout and Vice Chair of ASTM C15 Committee on Masonry Units. These awards and leadership roles help highlight the excellent work he has done, which has been documented in numerous technical papers, articles, and presentations.

Within TMS, Dr. McGinley has served in numerous leadership roles, currently serving as Secretary/Treasurer of the Society, and as Chair of a Subcommittee of TMS 402/602. In the past, he also served as Chair of the Electronic Communications Task Group, Chair of the Design Practices Committee and as a member of TMS’s Board of Directors. He has served as an author for every edition of the Masonry Designers’ Guide, and in 2008 received a TMS Service Award for his work on the MDG, taking over a major design example that needed his leadership. As Secretary/Treasurer, Dr. McGinley also serves on TMS’s Executive Committee and Board of Directors, offering valuable insight and recommendations.

Dr. McGinley served on the Hurricane Opal Disaster Investigation Team for TMS, and has supported the Society and the masonry industry through numerous technical presentations and studies. As an instructor for the Masonry Design seminars he has educated many outside of the university setting on the structural aspects of masonry. As a professor he has developed and taught masonry courses including a capstone project.

The Masonry Society formally recognized Dr. McGinley at its 2018 Annual Meeting in Cleveland, Ohio during its Awards Lunch on October 4. To qualify for Fellow Membership status, a TMS Member must have made outstanding contributions to the Society and have been a Member for no less than 10 consecutive years. Nominations are due by February 1st each year. Those granted Fellowship status carry the designation FTMS, Fellow of The Masonry Society.