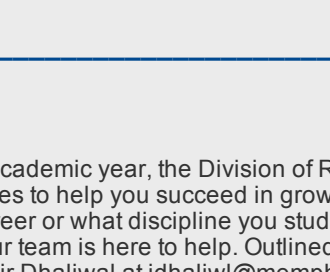




September 2020

View newsletters in browser



COVID-19: Research Guidance and Updates

CONNECT WITH RESEARCH

Colleagues

As we embark on an unprecedented academic year, the Division of Research and Innovation is here to provide you with the tools and resources to help you succeed in growing your research capacity. Regardless of where you are in your academic career or what discipline you study, there are external funding opportunities for you to pursue, and our team is here to help. Outlined below are areas of expertise resources, but you are welcome to email Dr. Jasbir Dhallwaj at jdhallwaj@memphis.edu or our divisional team at research@memphis.edu with any questions you may have about how we can serve you. Thank you and we wish you a great start to this semester.

Research Training Resources

Our 2020 training calendar has been released with almost weekly opportunities for training throughout the academic year. All trainings will be offered virtually and recorded for future reference. Whether you are pursuing your first grant application or seeking to establish a major center, our team is here for you. [Division of Research & Innovation Training](#)

For Researchers

We have compiled all of the resources that faculty request in [one location](#). From there, you can setup your account for our grants and contracts management platform, find information on compliance requirements, learn about preparing proposals, and understand the next steps to take once you have received a grant. Our Grants and Contracts Management team is here to help. For questions and inquiries regarding exploring funding opportunities, initial questions on applications or for resources to aid in the review of proposal narratives, feel free to email Dr. Cody Behles at cbehles@memphis.edu in our Research Development Office. Our compliance team can be reached at research@memphis.edu.

Innovation in the Division

The [Division of Research & Innovation](#) is home to the [FedEx Institute of Technology](#) (FIT), the applied innovation arm of the University. Home to our Office of Technology Transfer and applied research technology clusters, FIT is a great resource for faculty interested in interdisciplinary applied innovation, or to engage in deep science entrepreneurship. FIT also offers corporate training programs; information available [here](#).

Other Resources:

- Core Facilities:** Including our integrated Microscopy Center and Metal Additive Manufacturing Lab.
- Instrument Fabrication:** A quick glance at the research equipment and instrumentation across campus.
- Centers and Institutes:** A quick overview of the centers and institutes on the University of Memphis campus.
- Newsletters:** The place where we celebrate faculty research awards, announce internal funding opportunities and promote the research ecosystem of the UoM. To sign up or send items for inclusion, email Mary Ann Dawson at pladawson@memphis.edu.

RESEARCH



UoM Sets Record Year for Research

Road to R1 paved with progress

The past 18 months have been a defining period for the University of Memphis. Our faculty and research staff were presented with the challenge of achieving R1 within a five-year period. Progress in FY20 indicates that we are well positioned to meet that goal less than three years after being presented with the challenge. This is a common goal that will raise the profile of our University, the impact of our research and the prominence of our community as a destination for top-flight innovative talent nationally.

Evidence of Success

This progress has been displayed in the phenomenal improvement in key metrics over the last 18 months:

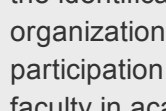
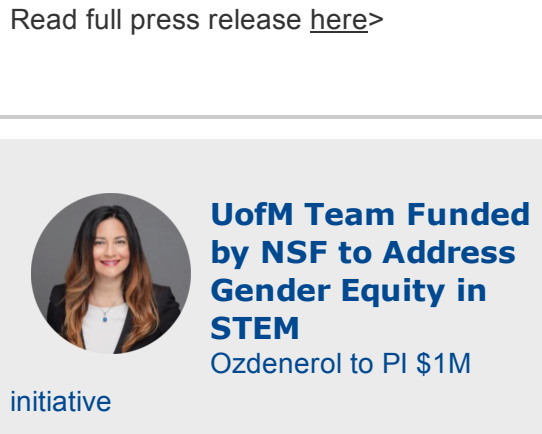
Improved Metrics: FY19 to FY20

- Total award dollars increased 25%
- Total federal award dollars increased 48%
- NSF awards increased 147%
- NSF research expenditures increased 20%
- Junior faculty proposal submissions increased 27% (55 proposals)
- PostDocs increased 236% (57 postdocs)
- PhD-qualified research staff increased 307% (57 staff)
- Faculty with \$500k or more in awards increased 87% (27 faculty)
- Single awards of \$250k or more increased 36% (49 awards).

For more information on this data, contact Dr. Cody Behles at cbehles@memphis.edu.

FY20 Research Awards:

\$407,763,437.00



UTHSC and UoM Partner to Fight COVID-19

Nine projects funded with CORNET Awards

Nine research teams are awardees of the 2020 University of Tennessee Health Science Center (UTHSC)/University of Memphis (UoM) SARS-CoV2/COVID-19 Research CORNET grants. The grant competition was specifically geared to facilitate new collaborations between UTHSC and UoM faculty on projects designed to better understand the virus and find therapies to end the pandemic.

The projects and principal investigators (PI) are:

"Determination of Inflammatory and Fibrotic Markers in SARS-CoV2 Infected Macrophages and Fibroblasts": Theodore Cory, PharmD, PhD (UTHSC); Brandt Pence, PhD (UoM)

"Host Genes, Immune Response and Susceptibility Resistance to SARS-CoV2": Kui Li, PhD (UTHSC); Xiaohua Huang, PhD (UoM)

"Creating the UTHSC-University of Memphis COVID-19 Geographic Insights Collaborative": David Schwartz, MD (UTHSC); Esra Ozdenorol, PhD (UoM)

"Models of Lung Microenvironment to Explore COVID-19 Pathogenesis and Drug Development": Marko Radic, PhD (UTHSC); Gary Bowlin, PhD (UoM)

"Aerosolization of Emitted Particles in Multiple Breathing, Speech and Singing Activities": Sandra Averett, PhD (UTHSC); M. Boys, PhD (UoM); MSc, FACS (UTHSC); Ranganathan Gopalakrishnan, PhD (UoM); Miriam van Mersbergen, PhD, CCC-SLP (UoM); Daniel Foti, PhD (UoM); Jeffrey Marchetta, PhD (UoM); John Hochstein, PhD (UoM)

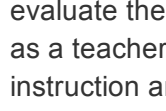
"Identifying Areas of Geographical Inequalities in COVID-19 Mortality and Mortality through Mapping of Spread of Confirmed Cases and Deaths across Disadvantaged Areas in Tennessee": James Rhudy, Jr., PhD, DNP, APRN, CCNS, CCRN-CMC-CSC (UTHSC); Anzhelina Antipova, PhD (UoM)

"Clinical, Immunological and Viral Determinants of COVID-19 Disease Severity in Adults and Children": Heather Smallwood, PhD (UTHSC); Nick Hysmith, MD (UTHSC); Colleen Jonsson, PhD (UTHSC); Yu Jiang, PhD (UoM)

"Nrf2 Small Molecule Modulation of COVID-19 Multi-organ Tissue Injury": Elizabeth Fitzpatrick, PhD (UTHSC); Thomas Sutter, PhD (UoM)

"The Impact of the COVID-19 Pandemic on Racial, Genetic, and Socioeconomic Disparities in Access to Care and Health Outcomes Among Patients with Ambulatory Care Sensitive Conditions": Sanya Surbhi, PhD, MS, BPharm (UTHSC); Aram Dobalian, PhD, JD, MPH (UoM)

Read full press release [here](#)



UoM Team Funded by NSF to Advance Gender Equity in STEM

Ozdenorol to PI \$1M

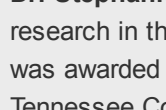
Initiative

The NSF ADVANCE program is designed to foster gender equity through a focus on the identification and elimination of organizational barriers that impede the full participation and advancement of diverse faculty in academic institutions. Organizational barriers that inhibit equity may exist in policies, processes, practices and the organizational culture and climate.

Dr. Esra Ozdenorol, (PI), and **Drs. Iroze Sabri** (Co-PI), **Stephanie Fivoy** (Co-PI), **Craig Stewart** (Co-PI), **Amanda Rockinson-Szapkiw** (Co-PI), **Jacob Allen** and **Dean Abby Parrill-Baker** will lead and implement the ASPIRED project.

ASPIRED at the University of Memphis will adapt evidence-based strategies from other ADVANCE institutions to change the institutional climate at the UoM and increase gender equity in recruitment, hiring, retention and advancement in STEM. UoM needs a strategic institutional investment in recruitment and retention activities, coordinated initiatives across the institution and improvement of institutional processes to foster a culturally and gender inclusive environment that promotes the advancement of STEM women faculty, especially underrepresented minorities.

For more information on this project, contact Dr. Ozdenorol at ezozdenor@memphis.edu.



\$1.4 M Awarded to UoM's AutoTutor for Adult Reading Comprehension

To further development tools

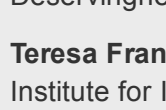
AutoTutor for Adult Reading Comprehension (AutoTutor-ARC) has received funding for its continued development on a grant from the Institute of Education Sciences of the U.S. Department of Education for \$1.4 million. In the United States, one in six adults is a struggling reader with a low level of proficiency. Adult literacy programs face many obstacles such as being underfunded, having difficulty retaining students and catering to diverse populations. AutoTutor for Adult Reading Comprehension (AutoTutor-ARC) is a proposed web-based intelligent training system to aid these programs.

The AdultEd Research Team entitled the project "Developing a Technology-based, Reading Comprehension Instruction System for Adult Literacy Students." Within the project, AutoTutor-ARC incorporates conversational agents, dozens of lessons with practice questions, and embedded tests to monitor student learning. The research team will develop tutorial lessons for adult students to encourage digital literacy skills and a toolkit dashboard for literacy providers and their students. This dashboard will better integrate technology into literacy programs by enabling efficient planning and tracking of students' progress throughout the lessons. These developments will come alongside both updates to AutoTutor-ARC's software and evaluations of its progress through the experiences of literacy providers and adult learners. In doing so, this research will evaluate the use of the web-based system as a teacher-led supplement to classroom instruction and as a distance learning platform for adult use outside of the classroom.

Principal investigators and sub-awardees are: **Dr. John Sabri**, Director of the Department of Educational Policy, University of Memphis; **Dr. Daphne Greenberg**, Georgia State University; and **Dr. Tenaha O'Reilly**, Educational Testing Service.

Read official press release [here](#)

Official abstract and announcement [here](#)

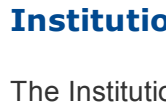


CERTI Travel to North Carolina After Magnitude 5.1 Earthquake

Studies aftershocks of largest event in the area

Specialists from the University of Memphis' Center for Earthquake Research and Information (CERTI) traveled to monitor aftershocks of the magnitude 5.1 earthquake that occurred two miles southeast of Sparta, N.C., at 8:07 a.m. EDT Sunday, August 9. As seen on the accompanying U.S. Geological Survey intensity map, the event was felt over an area larger than 50,000 square miles. Aftershocks were expected to continue for hours, days or weeks.

Read full press release [here](#)



COVID-19 FAQs

Updated August 11, 2020

Research Awards

August 2020

Dr. Wesley James, associate professor in the Department of Sociology, was awarded \$1,381,320 from Delta Health Alliance with the U.S. Department of Education for his project "Evaluate Impact of Health and Education Programs in the Mississippi Delta."

Dr. Stephanie Ivry, associate dean for research in the Herff College of Engineering, was awarded \$465,822 from Southwest Tennessee Community College with the U.S. Department of Labor for her project "Greater Memphis Apprenticeship Pathway," and \$30,000 from the Women's Foundation for a Greater Memphis for her project "Girls Experiencing Engineering 2020."

Dr. Jamein Cunningham, assistant professor in the Department of Economics, was awarded \$74,000 from the Washington Center for Equitable Growth for his project "The Evolution of Civil Rights Enforcement and Economic Prosperity of Minorities."

Dr. Maryam Salehi Esfandarani, assistant professor in the Department of Civil Engineering, was awarded \$44,395 from Shelby County Schools for her project "Identify the Sources of Lead (Pb) in Shelby County Schools Drinking Water to Develop Effective Remediation Practices."

Dr. James Murphy, professor in the Department of Psychology, was awarded \$35,881 from Washington State University with the National Institutes of Health for his project "Integration of Motivational Interviewing and Behavioral Economics theories to Enhance Measurement of Client Language as a Mechanism of Behavior Change."

Dr. Todd Zoblotsky, research associate professor in the Center for Research in Educational Policy, was awarded \$20,000 from Shelby County Schools for his project "Shelby County Schools Equity Audit 2020."

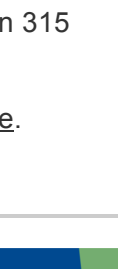
Dr. Daniel Greenwood, research assistant professor and director of the Human Performance Center, was awarded \$15,000 from the American Athletics Conference for his project "Using an Applied and Hands-on Education Process to Improve Athlete Nutritional Knowledge and Dietary Habits."

Dr. Kris-Stella Trump, assistant professor in the Department of Political Science, was awarded \$2,500 from the American Political Science Association for her project "Lazy Natives and Hard Working Immigrants: Comparing the Impact of Deservingness Cues on Perceptions of Deservingness."

Teresa Franklin, executive director of the Institute for Interdisciplinary Memphis Partnerships to Advance Community Transformation (IIMPACT), was awarded \$2,500 from the Association of Public and Land Grant Universities for her project "University of Memphis Institute of Interdisciplinary Memphis Partnerships to Advance Community Transformation (IIMPACT)."

* Data reported the 18th of each month. Awards finalized after the 18th will be reported the following month.

RESEARCH COMPLIANCE



Institutional Review Board

The Institutional Review Board (IRB) has continued to focus on increasing efficiency without compromising the commitment to protect human subjects. In the last fiscal year, it realized a 17% reduction in turnaround time, which now averages 6.74 days, a rate that is far below what is typically found at similar-sized institutions. To continue to make these gains, the 13-member UoM IRB (composed of faculty, a community member, and a non-scientist as required by federal regulations) has engaged a greater number of board members in reviewing protocols classified in the expedited category.

The number of protocol reviews remained consistent with just under 1800 protocol reviews in 2020 and 2019. The number of incidents decreased by half, closures increased 3-fold, initial submissions and modifications remained steady. Although the numbers in categories of review changed for FY2020, the IRB continues to work diligently and quickly to keep human subjects safe and our research compliant.

For more information or if you have questions, email researchcompliance@memphis.edu.

RESEARCH CLUSTERS



ADDITIVE MANUFACTURING

AGRICULTURE & FOOD TECHNOLOGIES

BIOLOGICALS

CAST

DATA SCIENCE

DRONES

SMART CITIES

QUICK GUIDE TO RESEARCH AND SPONSORED PROGRAMS

Researching, Submitting and Accepting Funded Research

A resource for faculty and staff

Research Development and Sponsored Programs are the central research support teams responsible for the review and submission of proposals (grants, contracts, cooperative agreements, non-monetary) to external sponsors and for the review and acceptance of any sponsored project funds. The team includes Pre-Award Services, Cooperative and Award Services, Electronic Research Administration and Research Development. They are located in 315 Administration Building.

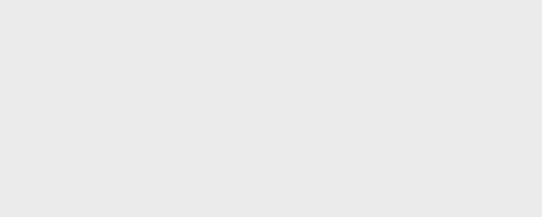
The Quick Guide is available [here](#).

NEWSTO FEATURE IN THE RESEARCH + INNOVATION NEWSLETTER?

We welcome the opportunity to highlight the research infrastructure and innovation capabilities of the University of Memphis. Email your major award notifications, honors, research talks, publications, etc. to research@memphis.edu for consideration to be held at the UoM, etc., for inclusion in an upcoming issue of the newsletter. We look forward to sharing the world-class accomplishments taking place at the University of Memphis.

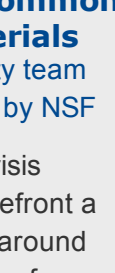
CONTACT US

For the latest news and economic development initiatives at the research park, visit the website [here](#)



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INNOVATION

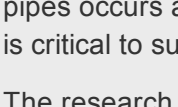


UMRF Ventures Professorships Awarded

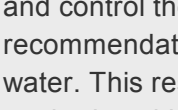
UoM junior faculty team research leaders selected

The University of Memphis UMRF awarded three UMRF Ventures Professorships in August. These professors were awarded based on the progress of junior faculty in advancing the research capacity of the University of Memphis.

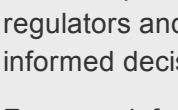
The professors were selected for a period of two years beginning Sept. 1 and includes a stipend that can be utilized for research and other related expenses. Early Career Awards from the National Science Foundation (NSF) and other federal funding agencies are among the most prestigious awards a junior faculty member can earn and are the best indicators of long-term research success. UMRF is committed to retaining and growing this top-level talent and offers these professors to any recipients of Early Career Awards from major federal funding agencies. The 2020 professors were awarded to:



Amber Jennings, Biomedical Engineering NSF CAREER Award - "Enhanced Biofilm Dispersal Signals for Long-term Protection of Engineering Materials"

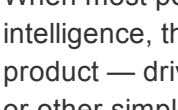


Ranga Gopalakrishnan, Mechanical Engineering DoE (Department of Energy) Career Award - "Thermodynamics and Transport Models of Strongly Coupled Dust Plasmas"



Thomas Watson, Computer Science NSF Career Award - "Structural Communication Complexity"

For more information on these awards, contact Research & Innovation at research@memphis.edu.



Exploring Lead Build-up in Common Building Materials

UoM junior faculty team funded \$330,000 by NSF

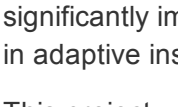
The Flint water crisis brought to the forefront a national concern around the contamination of our drinking water sources, but these concerns are not limited to Michigan. Lead was among the principle concerns in Flint, and this poisonous environmental pollutant can be found in high concentrations in drinking water in many communities across the country.

Lead in tap water mainly originates from corrosion of lead pipes or fittings, but emerging evidence suggests that plastic polyethylene pipes in building plumbing (75% of new construction) could accumulate lead on their surface. Plastic pipes are increasingly used to replace older metallic plumbing and construct new drinking water systems due to their lower cost, easy installation, corrosion resistance and longer service life. We do not fully understand how lead deposition on plastic pipes occurs and learning more about this is critical to sustaining our public health.

The research team of **Dr. Maryam Salehi** (Civil Engineering) and **Dr. Shawn Brown** (Biology) will investigate lead deposition onto and release from the commonly used plastic potable water plumbing with an aim to better understand and control these processes and develop recommendations for healthier drinking water. This research will develop new methods to identify previous lead exposure incidents throughout plumbing systems. Successful completion of this project will lead to better understanding of lead fate within potable water plumbing to minimize public exposure and assist regulators and the public in making informed decisions.

For more information on this grant, contact Salehi at maryam.s@memphis.edu.

Read full press release [here](#)



Venugopal Funded in Cutting-Edge Markov Logic Advances growing AI research community at UoM

When most people imagine artificial intelligence, they picture the end-user product — driverless cars, Amazon's Alexa or other simple implementations of AI that make us feel like the future has arrived. For researchers at the UoM, the challenge of AI is not what the future is, but the challenge of AI is what the future of AI will be.

Dr. Deepak Venugopal and co-PI, **Dr. Vasilis Rous**, were funded by the NSF to develop foundations for next-generation machine learning algorithms by combining Markov Logic Networks (a symbolic AI model) with Deep Neural Networks (DNNs).

Though DNNs have revolutionized AI and machine learning in the last couple of decades, they rely purely on the data and do not utilize background knowledge explicitly in their learning algorithms, which can sometimes result in models that generalize poorly in real-world applications (e.g. driving a car requires significant capital market knowledge). Markov Logic Networks (MLNs) on the other hand is a probabilistic logic that is based on symbolic AI and can therefore encode complex background knowledge explicitly. However, they lack inference and learning capabilities that are as scalable and accurate as DNN-based methods.

Venugopal and Rous's project will develop novel foundational techniques to combine these two significant advances in AI, in which MLNs provide the DNN with task-specific, interpretable background knowledge which helps the DNN to learn richer models. Further, they will also demonstrate the real-world applicability of these techniques by utilizing them to significantly improve personalized learning in adaptive instructional systems.

This project will be a critical addition to the AI landscape, allowing us to incorporate richer background knowledge, intuitive psychology and common sense into machine learning models to tackle real world challenges.

Venugopal's work joins recent successes in AI research at the UoM - [DataWhys](#) and the [Learner Data Institute](#).

Read more on this award [here](#), or contact Venugopal at dvengopal@memphis.edu.



ATHENA(technē)

September 11-12 Virtual | Tickets are Free

The FedEx Institute of Technology is once again uniting with tech organizations to bring the first women's hackathon to Memphis. **ATHENA(technē) All Women's Hackathon** will be virtual this year and will feature various sessions across the two-day event. This year's theme - **TECH LIKE A GIRL** - encourages women (ages 13 and above) who are interested in technology to come together, collaborate on projects and grow opportunities for women in tech.

Get your tickets now to learn about the latest tech, tools and trades that will help you blaze a path forward on your journey to becoming the fierce and capable leader you are meant to be. See all panels & sessions on **ATHENA(technē) schedule**, and get your **FREE tickets** now!

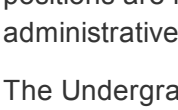


UoM Faculty Influence National Policy on Algorithmic Trading in U.S. Capital Markets

The U.S. SEC 2020 report on risks and benefits of algorithmic trading in the U.S. capital markets, mandated by and submitted to the U.S. Congress, cites five different articles authored by FIR faculty.

Drs. Allen Carrion, PK Jain, **Tom Melnich**, **Konstantin Sokolov** and PhD alum **Jianing Huang**. These faculty members have influenced national policy on trading and market structure directly (Carrion and Jain had worked at the SEC with financial markets, mandated by the Act grants) and indirectly through their continuing pre-eminent research publications.

Read the full report, **Algorithmic Trading in U.S. Capital Markets**, [here](#).



Undergraduate Research Fellows Program

The Helen Hardin Honors College will again coordinate with the Office of Student Financial Aid to allow honors students to use their federal work-study funds to work as undergraduate research assistants for UoM faculty. The goal of this program is to provide opportunities for students to learn the research or scholarly methods in their field while providing research support to faculty. Please note: The work-study positions are not secretarial or other administrative support positions.

The Undergraduate Research Fellows Program is open to any honors student who is eligible for work-study funds. The pay rate will be \$15 per hour with the expectation that most students will work 10-20 hours per week. There will be no cost to the faculty member or department, as the Helen Hardin Honors College and the Office of Student Financial Aid are sharing the expense.

To participate in the program, students will apply directly to the Helen Hardin Honors College office. The Honors College will screen students for their work-study eligibility and forward the applications of eligible candidates to the faculty mentors. Faculty mentors will have complete autonomy to review applications, interview students and choose their assistants. Faculty members will be responsible for carefully monitoring the hours that the students work.

The first step in launching this program is to create a broad selection of research assistantships. Faculty interested in participating in this program should provide the Helen Hardin Honors College the following information:

The Helen Hardin Honors College will post available research assistant positions on this [website](#).

Please submit your research project descriptions [here](#).

Please contact Dr. Melinda Jones, director of the Helen Hardin Honors College, for further information at mjones6@memphis.edu.

TECH MEETUP: DevMemphis

September 1 | 6-7:30 PM | Teleconference

TECH Meetup: Machine Learning/Data Science/R September 1 | 7-8 PM | Teleconference

TECH Meetup: Secure DevOps with Adam Misako & MemDevOps September 2 | 2-4 PM | Teleconference

TECH Meetup: WordPress/Memphis September 3 | 6-9 PM | Teleconference

TECH Meetup: Code Together I A free community coding session September 5 | 1-3 PM | Teleconference

TECH Meetup: Code Connector Virtual Networking September 7 | NOON-1 PM | Teleconference

TECH Meetup: Memphis Web Workers September 8 | 6-8 PM | Teleconference

TECH Meetup: Memphis Net September 10 | NOON-1 PM | Teleconference

TECH Meetup: MemPASS/Power BI September 10 | 5:30-7:30 PM | Teleconference

ATHENA(technē) Woman's Virtual Hackathon September 11-12 | Teleconference

TECH Meetup: Code Together September 13 | 1-3 PM | Teleconference

TECH Meetup: Code Connector Virtual Networking September 14 | NOON-1 PM | Teleconference

Professional Development Training: Agile Coaching September 14-18 | 8 AM-NOON | Teleconference

Professional Development Training: Agile Finance September 15-17 | 8 AM-2 PM | Teleconference

TECH Meetup: Memphis M365 September 17 | 3-5 PM | Teleconference

TECH Meetup: Code Connector Networking September 21 | NOON-1 PM | Teleconference

TECH Meetup: Memphis Python September 21 | 6:30-8:30 PM | Teleconference

TECH Meetup: Intro to Synclison Essential Studio Memphis Xamrin September 22 | 6-8 PM | Teleconference

TECH Meetup: Code Co-op I Free Coding Hack Night September 22 | 6:30-8 PM | Teleconference

TECH Meetup: MemphisPHP September 22 | 6:30-8 PM | Teleconference

TECH Meetup: Memphis Agile September 24 | 6-7:30 PM | Teleconference

TECH Meetup: What's New in C# 8 Interfaces with Jeremy Clark and C# 8 September 24 | 6-8 PM | Teleconference

TECH Meetup: Code Connector Virtual Networking September 28 | NOON-1 PM | Teleconference

Professional Development Training: Agile Coaching September 28-October 1 |