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New for 2015

CUR booth at JMM. For the first time this year, we will have an booth in the exhibit hall at the **Joint Mathematics Meetings** in Seattle, January 6-9, 2016. Join us to discuss Undergraduate Research.

Mathematics Association of America Special Interest Group (SIGMAA) on Undergraduate Research. Newly founded with help of CUR councilors, to promote and broaden participation in undergraduate research in mathematics by supporting faculty serving as mentors and by supporting interested students. For more information, view the [SIGMAA website](#).

Education Division. The new division will provide leadership and discipline-specific expertise in developing undergraduate research in Schools of Education, education-related programs and in related fields and professions. For more information, see their [website](#).

Faculty Mentoring Awards



Kumer Pial Das is an associate professor of statistics at Lamar University, TX, where he has been teaching undergraduate and graduate mathematics and statistics courses since 2005. He obtained his PhD in Mathematics from Auburn University, Alabama in 2005 and his current research interests are in the area of statistics, actuarial mathematics, big data analytics and probability theory. Dr. Das is a recipient of 2013 Mathematical Association

of America's Henry L. Alder award for distinguished teaching. He is very much involved in undergraduate and graduate research and has published extensively on a variety of topics in statistics and mathematics with his undergraduate and graduate students. Additionally, he has been named the 2015 Lamar University Scholar in recognition of a lifetime of outstanding scholarly and creative achievements, including mentoring more than 50 undergraduate students in more than 45 different projects in the past 10 years. Because of his enthusiastic involvement in undergraduate research he was appointed as the founding director of the Office of Undergraduate Research at Lamar University in 2013, and he is continuing to serve the office since then. He is a Project NExT fellow and is very much involved in many volunteer activities. In particular, he is the founder of the Free LU Math Clinic designed for local K-12 students. Because of this exemplary movement, he has been named the 2015 Julie and Ben Rogers Community Service Award recipient for Lamar University.

Narayan Thapa's relentless effort to make an impact globally by molding undergraduate students into promising researchers, and his love and dedication for his students has been recognized many times during his tenure as an assistant professor of mathematics at Minot State University. "The professionalism and class that Dr. Thapa carries himself with as a professor and a mentor is truly



exemplary. He brings a level of expertise and enthusiasm that is unparalleled," said one of his former students proudly. Following his Fellowship at Project NExT in 2010, he received a number of grants to investigate and implement techniques of inquiry based learning to undergraduate research. He has passionately mentored many students with the aim of indulging them in an intensive and transformative research experience in applied mathematics, in which they learn to view themselves as producers of knowledge as opposed to consumers of knowledge.

Since 2010, he has worked with 26 undergraduates in 17 research projects that were interdisciplinary in nature and that were supported by several grants including grants from NSF through MAA and Educational Advancement Foundation. These projects have led to 4 publications in peer-reviewed international journals, 18 presentations at regional conferences, 14 presentations at national mathematics meetings, and 2 poster presentations at Council on Undergraduate Research. Narayan received his M.A., M.Ed. and PhD in Mathematics from University of Oklahoma, Norman, OK. Additionally, he is leading the Department of Mathematical Sciences at Cameron University, Lawton, OK as a Chair.

Dr. Hala ElAarag is an associate professor of computer science at Stetson University. She has advised 28 senior research students and 5 Summer Undergraduate Research Experience (SURE) students. Two of her SURE advisees have presented their research on Capitol Hill at CUR's esteemed Poster on the Hill event.



Dr. ElAarag has been published extensively. She has over 50 publications in prestigious journals and peer refereed conference proceedings (cited over 500 times), in addition to 8 books. Thirty two (32) of her publications are co-authored with undergraduate students, none of which are undergraduate journals. She has given over 30 presentations in national and international venues and her students have given 17 presentations. She has won Stetson University's Hand Award for research in 2005. She also received the best paper award at the 11th Communication and Networking Symposium held in Ottawa Canada in 2008.

Dr. ElAarag is Vice President/President Elect of the Consortium of Computing Sciences in Colleges. In 2012 she received the Society for Modeling and Simulation International (SCS) Outstanding Service Award for outstanding and dedicated technical contributions and services to the Modeling and computer simulation discipline and to SCS. She was co-general chair of Communication and Networking Simulation Symposium, in 2009 and 2015. She was Vice General Chair and General Chair of SCS Spring Simulation Multiconference in 2011 and 2012, respectively. She has served as a Councilor of the Mathematics and Computer Science Division of the Council on Undergraduate research 2011-2014.

Nominations for the 2016 awards are due March 31st. Please see the [division website](#) or contact [Jan Rychtář](#) for more information.

MathFest CUR Student Award

Megan Rodriguez. Through the national mathematics honor society Pi Mu Epsilon, the Division sponsors an undergraduate student award for "Best Presentation on Original Research" at the Mathematical Association of America's national MathFest conference. This year, the award was presented to Megan Rodriguez (Hood College) for her talk, "Graph Theory Representations and Computational Complexity of Sliding Block Ice Puzzles Inspired by Legend of Zelda." This research was supported by her college's honors program. Megan just graduated in May 2015 and has accepted a position at a government contracting company where she will apply her skills in mathematics, computer science, and web development to attack some of the most vexing problems facing our nation.



Upcoming Deadlines of Interest to Faculty

1. A [Research Experiences for Undergraduates Symposium](#) will be held in Arlington, VA, October 25-26, 2015.
2. The 16th [CUR Biennial Conference](#) will be in June 26-28, 2016 at the University of South Florida, Tampa, FL. Talk abstracts are usually due in November. Note: registration fees are high because they include most meals.
3. [CUR Annual Business Meeting](#) for elected councilors will be in at the University of South Florida, Tampa, FL, usually in the days preceding the CUR Biennial conference.
4. Election for [CUR Councilor](#) positions, nominations due November 6th, 2015.
5. [CUR-Goldwater Scholar Faculty Mentor Award](#), initial nomination by President or Provost due November 2nd, 2015.
6. [Center for Undergraduate Research in Mathematics \(CURM\)](#) mini grant applications. Due November 15th.
7. [CUR Quarterly submissions](#) of a short prospectus submissions (300-500 words) describing the focus of a proposed article or vignette. The winter deadline will be in early January.
8. [CUR Dialogues](#), February 18-20, 2016 in Washington DC. Registration deadlines are December 11, 2015 (early) and February 5, 2016 (final).
9. [CUR Division Mentoring Awards Nominations](#), due March 31st 2016.
10. [Preparation for Industrial Careers in Mathematical Sciences](#) (PICMath), March 2016.
11. The [CUR institutes](#) are multi-day meetings on a college campus to discuss an issue related to undergraduate research and faculty development. Deadlines vary.

See the [Division of Mathematics and Computer Science webpage](#) for links to each of the above.

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Chair's Message

I left the 2015 Annual Business Meeting more convinced than ever that the future of the Math/CS Division of CUR is strong. I'm excited to be able to chair a division represented by such talented and hard-working Councilors.

This [newsletter](#) provides a great summary of much of the work that the division is doing, and I don't need to repeat it here. Instead, I'd like to use this - my first "Chair's Message" to look to the future.

No one doubts that undergraduate research has come a very long way in the last 20 years. If a faculty member from 1995 could survey today's landscape - full of REU's, Regional Undergraduate Research Conferences, and funded summer programs at thousands of universities - I suspect they would be amazed. Even better, few disciplines have embraced Undergraduate Research as deeply as Mathematics. Undergraduate students and their work feature prominently at the national meetings of the Mathematical Association of America, and form an important component of many regional meetings of our mathematics, statistics, and computer science organizations.

Given this, our counterfactual visitor from 1995 might be excused for believing that the work was done, that the state of undergraduate research in mathematics and computer science was as strong as we could hope, and that we can now enjoy the fruit of our labor.

Our important task in the next twenty years is to ensure that we do not fall into the trap.

As Jan Rychtář (our new Vice Chair) reminded me this summer, there are still professional mathematicians who claim that it's not possible to do research with undergraduates. And not only are there math majors graduating from schools across the country who haven't participated in a authentic research experience, but there are those who have never been given the opportunity.

Even though the evidence of the benefits to students who participate in undergrad

research grows each year, these gaps remain. Although we have done well, we can and we must do still better.

The Councilors of our division have begun an ambitious program to continue to strengthen undergraduate research in mathematics and computer science. One of our top priorities is to bring our disciplines and CUR closer together. CUR has a lot to offer the worlds of mathematics and computer science, but many people in these fields know very little about the organization.

First steps were taken by Patrick Rault and Allison Henrich this August. These two talented teachers have three things in common. They are both winners of MAA's Alder Award this year, they both serve as CUR Councilors, and they both used their Alder Award talk at MathFest to highlight the work of CUR!

At the Joint Mathematics Meetings in January, we will continue what they have begun with a booth at the exhibit hall (stop by and see us!). Over the next two years, individuals will be working to take the best of CUR's resources and practices, and make the accessible to the Math and CS communities. Tell your friends who are interested in undergraduate research that there has never been a better time to join CUR!

We are launching many other new programs as well. This [newsletter](#) will help to share the good work of our division with all of its members, and I hope it will encourage more people to become active in the division's projects! We have started discussions about ways to promote research in Math, Stats, and CS at the high school level, and we are looking to enhance our relationship with the professional organizations in all of these fields. We'll keep you informed as we make progress in these areas, and as we take on new projects and goals.

If you have questions about our division, or if you'd like to join us in our work, please contact me at any time!

– Dominic Klyve

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CUR Resources

What can CUR do for you?

1. [CUR Department / Program Reviews](#)
2. [CUR publications about Undergraduate Research](#)
3. [CUR resources on the benefits of Undergraduate Research](#)

What has CUR done for you, and is still doing for you?

1. Addressing future trends in UR: assessment, UR in curriculum, big collaborations in UR, etc.
2. Access to CUR programs: POH, NCUR, Institutes, Biennial conference, etc.
3. Networking with and learning about effective practices used in other disciplines
4. Access to CUR publications that address issues not addressed by the MAA (e.g., Accessing the effectiveness of UR)
5. Advocacy for UR: NSF REUs resulted from CUR advocacy, the Goldwater/CUR award, the founding of the MAA SIGMAA on UR, etc.
6. Help in instituting activities that promote UR at your college or university (e.g., teaching credit for faculty who are doing UR, UR being valued in Promotion and Tenure, etc.). Organizations like CUR that has members from multiple disciplines and administrators are more effective than disciplinary organizations.

To learn more, see our [top 2³ + 2 reasons to join CUR](#).



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Posters on the Hill

The Council on Undergraduate Research hosted the 19th annual Poster on the Hill (POH) on Thursday, April 29, 2015 in the Rayburn Building, Washington, DC. This program was designed to give members of U.S. Congress an opportunity to interact with student researchers about their research. This enables members of Congress to see the effect of funding undergraduate research in the lives of students.

This year, 60 posters were selected from over 450 completed applications. The students selected to represent the Mathematics and Computer Science Division were:

Dana Cochran, California State University - Channel Islands, (Advisor: Dr. Kathryn Leonard, California State University - Channel Islands), "Comparing Corpus Callosum Images Using the Medial Axis"

Richard Magner, Eastern Connecticut State University, (Advisor: Dr. Mizan R Khan, Eastern Connecticut State University), "Geometric Questions in Number Theory"



Megan Ann DeLaney, Massbay Community College, (Advisor: Giuseppe Sena, Massbay Community College), "Finding the Optimal Route Around an Amusement Park to Maximize Fun and Minimize Time by Applying a Parallel Genetic Algorithm

to the Traveling Salesman Problem"

Paul Pernici, Ashland University, (Advisor: Dr. Paul Cao, Ashland University), "A Comparison of Feature Extraction and Feature Selection Algorithms for Pattern Recognitions"

Congratulations to the above students and their advisors. As one might expect, reviewers were impressed by the overall quality of the applications and the research being conducted by undergraduates. The Posters on the Hill event is held annually, typically during the month of April. If you are mentoring undergraduate students this summer or know someone who is, please keep this program in mind and encourage your undergraduate students to apply. More information about this program can be found [here](#).

Upcoming Deadlines of Interest to Students

1. [Posters on the Hill](#) in Washington DC, usually in April. Submissions Accepted from September 2nd to November 4th, 2015.
2. [Joint Mathematics Meetings Undergraduate Poster Session](#) on Friday January 8th, 2016 in Seattle, WA.
3. [National Conference on Undergraduate Research \(NCUR\)](#) at UNC-Asheville, NC, April 7-9, 2016. Abstracts due December 3, 2015. Our division has a limited amount of travel support for participants; to apply, contact [Terri Lennox](#).
4. Research Experiences for Undergraduates (REUs) in [Mathematics](#) and [Computer Science](#). Deadlines range from December to April.
5. [MathFest 2016](#), August 3-6, 2016 in Columbus, OH. Deadline for student submissions is usually in early June.

See the [Division of Mathematics and Computer Science webpage](#) for links to each of the above.

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