

NATASHA A. MAMARIL

Associate Director for Undergraduate Research
Director, Illinois Scholars Undergraduate Research Program
The Grainger College of Engineering
University of Illinois at Urbana-Champaign
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Urbana, Illinois 61801
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EDUCATION

Doctor of Philosophy, Educational Psychology

Department of Educational, School, and Counseling Psychology, University of Kentucky
Dissertation Study: *Measuring undergraduate students' engineering self-efficacy: A scale validation study*. Chair: Dr. Ellen Usher.

Master of Science, Educational Psychology

Department of Educational, School, and Counseling Psychology, University of Kentucky.
Master's Thesis: *Through the pipeline: A qualitative study of women's self-beliefs in engineering*.
Thesis adviser: Dr. Ellen Usher.

Bachelor of Science, Chemical Engineering, Cum Laude

Department of Chemical Engineering, University of the Philippines Los Baños, College, Laguna, Philippines.
Undergraduate Thesis: *Parametric study for citric acid production using solid-state fermentation with Aspergillus niger on cassava pulp*. Thesis adviser: Dr. Pham Binh Chay.
Licensed Chemical Engineer. Board Certified 1997.

HIGHER EDUCATION WORK EXPERIENCE

Associate Director for Undergraduate Research
Director, Illinois Scholars Undergraduate Research Program
The Grainger College of Engineering
University of Illinois at Urbana-Champaign

February 2020 -
2017 - present

- Directs operations of the Illinois Scholars Undergraduate Research Program (ISUR) which includes the Semiconductor Research Corporation Undergraduate Research Program, DaRin Butz Foundation Research Scholars, Accelerated Learning and Engineering Research Training Program for Electronic and Cyber

Security, Clare Boothe Luce Research Scholars, IBM-IL Discovery Accelerator Institute Undergraduate Research Experience

- Develops and maintains partnerships with program sponsors (i.e., corporate and private foundations)
- Strategizes plans for recruiting students from underrepresented groups in STEM for undergraduate research programs that leverage on the ISUR program infrastructure
- Teaches and continuously improves the content of undergraduate research seminars for Grainger First-Year Experience Research Scholars and for 2nd to 4th year students in our undergraduate research programs
- Directs the Mentoring Undergraduates in Science and Engineering (MUSE) program that facilitates mentor-mentee relationships
- Creates, plans, organizes, and oversees undergraduate research-related workshops, panel discussions
- Spearheads and oversees college-wide events for undergraduate students to present their research work and to promote undergraduate research including research fairs in the fall and spring semesters and the annual research expo
- Serves as an authority on advice, guidance, support and direction for departments who are developing REU (Research Experience for Undergraduates) proposals and related programs, including student-led initiatives
- Develops and conducts student and mentor surveys to provide information and feedback on undergraduate research experiences across the College
- Writes grant proposals to fund undergraduate research initiatives
- Represents the College in campus-wide committees and programs related to undergraduate research

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Oct 2014 – Jan
2020

GRANTS AND AWARDS

Office of Naval Research, Accelerated Learning and Engineering Research Training (ALERT) Program in Cyber and Electronic Warfare, \$314,104, Multi-project Research Experiences for Undergraduate Midshipmen and Cadets, 2021-2022. (Awarded February 2021)

PI: Natasha Mamaril; Co-PIs: Don Takehara, Anthony Corapi

Clare Boothe Luce Foundation, Undergraduate Research Award, \$296,850, Research Funding Support for Women in Science and Engineering, 2020 – 2023. (Awarded October 2019)

PI: Natasha Mamaril; Co-PI: Jennifer Bernhard

Semiconductor Research Corporation Undergraduate Research Program Grant,
Est. \$28,600, Funding for undergraduate research scholars, 2023 – 2024
\$13,000, Funding for undergraduate research scholars, 2022 – 2023
\$28,600, Funding for undergraduate research scholars, 2021 – 2022
\$26,000, Funding for undergraduate research scholars, 2020 - 2021
\$7800, Funding for undergraduate research scholars, 2019 - 2020

DaRin Butz Foundation, Undergraduate Research Scholarship for Women in Engineering, \$200,000 for 10 years, 2018 -

Illinois International Program, International-themed Event Grant, \$750, International Research Symposium, 2018.

Intel/Semiconductor Research Corporation Undergraduate Research Opportunity Program Grant, \$5000, Senior Scholars Program for Research, 2017.

Dow Chemical Company University Impact Grant, \$5000, First Generation and Minority Students - Support for Mentored-Research, 2016.

Monsanto Student Development Fund (through Engineering Council Deans Student Advisory Committee), \$1000, Undergraduate Research Workshop, 2016.

Council on Undergraduate Research Conference Grant, \$850, Summer 2017

Student Support Funding, Graduate School, University of Kentucky, \$400/academic year, Fall 2013, Fall 2011, Fall 2010, Fall 2009, and Fall 2008.

Doctoral Student Travel Award, Office of the Dean, College of Education, University of Kentucky, \$250, Spring 2014, Fall 2011.

Doctoral Research Seminar Stipend, American Psychological Association, Division 15, \$500, Fall 2011.

American Association of University Women International Fellowship, \$18,000/year, 2008 - 2009.

FUNDED RESEARCH

Project Manager and Research Assistant

September 1, 2012

Collaborative Research: Research Initiation Grant: Influence of Motivation on Learning Outcomes in an Engineering Service Course – May 4, 2014

National Science Foundation, Research Initiation Grant in Engineering Education (RIGEE) (EEC Award No. 1240328)
Principal investigators: Dr. Ellen L. Usher (University of Kentucky) and Dr. Marian Kennedy (Clemson University)
\$150,000 (Awarded September 2012)

International Fellowship

Fall 2008 - Spring

Through the Pipeline: A Qualitative Study of Women's Self-Beliefs in 2009

Engineering (M.S. Thesis)

American Association of University Women (AAUW)

\$18,000

ADDITIONAL WORK AND RESEARCH EXPERIENCE

Research Assistant, P20 Motivation and Learning Lab,

Sept 1, 2012 –

University of Kentucky

May 4, 2014

Supervisor: Dr. Ellen Usher, Director

Duties: Served as project manager for National Science Foundation (NSF) funded project: Research Initiation Grant in Engineering Education (RIGEE): Influence of Motivation on Learning Outcomes in an Engineering Service Course (EEC Award No. 1240328); Supervised undergraduate and graduate students on research projects and oversaw lab activities

Research Assistant, P20 Motivation and Learning Lab,

Fall 2010 – Spring

University of Kentucky

2012

Supervisor: Dr. Ellen Usher, Director

Duties: Administered multiple waves of surveys to elementary, middle, and high school students as part of Motivation in Transition project and assisted in coordinating laboratory activities in Fayette County Middle Schools; Led group of undergraduate and graduate students in the lab's research projects

Graduate Assistant, Institutional Research, Planning, and Effectiveness, University of Kentucky

Spring 2008 –
Summer 2012

Supervisor: Tara Rose, Director of Assessment

Duties: Conducted literature reviews, created and administered surveys, managed and analyzed data on assessment of student learning, academic and academic support programs, and organized and coordinated campus-wide student learning assessments; assisted in planning and organizing national conferences for the Association for the Assessment of Learning in Higher Education (AALHE)

- Graduate Assistant for Assessment, College of Health Sciences,** Spring 2012
University of Kentucky
Supervisor: Dr. Sharon Stewart, Interim Dean and Professor
Duties: Coordinated assessment activities in the college, analyzed data, and prepared reports pertaining to assessment of student learning
- Research Assistant, Intelligent Transportation Systems, Kentucky Transportation Center, College of Engineering,** Fall 2007,
University of Kentucky Summer 2008
Supervisor: Dr. Joseph Crabtree, Director
Duties: Conducted research in areas of transportation, specifically in electronic toll collection and automated recognition systems (e.g., USDOT and License Plate Recognition System), reviewed literature, encoded and analyzed various data obtained from evaluation sites, and prepared technical reports
- Technical Services and Applications Development Engineer, Technical Department, 3M Philippines** October 1997 –
Philippines January 2006
Supervisor: Andy Juan, Manager
Duties: Conducted research on material development and modification, performed laboratory tests, collaborated with local and international multidisciplinary teams to design materials and develop applications for adhesives and tapes, performed field tests, and prepared technical reports
Created and conducted local training programs on adhesives and tapes and their applications in various markets
- Research Assistant, National Institute of Molecular Biology and Biotechnology,** 1995 – 1996
University of the Philippines
Supervisor: Dr. Pham Binh Chay, Project Leader
Duties: Conducted literature review, designed experimental set-up, collected and analyzed samples, managed and analyzed data, collaborated on writing the reports for the project on citric acid production from cassava pulp

PUBLICATIONS

- Ellen L. Usher, Amanda R. Butz, Xiao-Yin Chen, Calah J. Ford, Jaeyun Han, **Natasha A. Mamaril**, David B. Morris, Pilvi Peura & Raven R. Piercey (2023): Supporting self- efficacy development from primary school to the professions: A guide for educators, Theory Into Practice, DOI: 10.1080/00405841.2023.2226559
- Chen, X.-Y., Usher, E. L., Roeder, M. L., Johnson, A. A., Kennedy, M. S., & **Mamaril, N. A.** (2023). Mastery, models, messengers, and mixed emotions: Examining the development of engineering self-efficacy by gender. *Journal of Engineering Education*, 112, 64-89. <https://doi.org/10.1002/jee.20494>
- Cross, K. J., **Mamaril, N.**, Johnson-Glauch, N., & Herman, G. (2021). Building Cultures of Collaboration That Promote Instructional Change. *Studies in Engineering Education*, 2(2), pp. 1–18. <http://doi.org/10.21061/see.48>
- Mamaril, N. A.**, Usher, E. L., Li, C. R., Economy, D. R., & Kennedy, M. S. (2016). Measuring undergraduate students' engineering self-efficacy: A validation study. *Journal of Engineering Education*, 105, 366-395. <https://doi.org/10.1002/jee.20121>

PEER-REVIEWED PROCEEDINGS

- Cross, K. J., Johnson, N. E., **Mamaril, N. A.**, & Herman, G. L. (2016, June). Understanding how a culture of collaboration develops among STEM faculty. *Proceedings of the 2016 ASEE Annual Conference and Exposition*, New Orleans, Louisiana.
- Usher, E. L., **Mamaril, N. A.**, Li, C. R., Economy, D. R., & Kennedy, M. S. (2015). Sources of self-efficacy in undergraduate engineering. *Proceedings of the 2015 ASEE Annual Conference and Exposition*, Seattle, Washington.
- Usher, E. L., Economy, D. R., **Mamaril, N. A.**, Li, C. R., Sharp, J., & Kennedy, M. S. (2015). Undergraduate students' materials science and engineering self-efficacy: Assessment and implications. *Proceedings of the 2015 ASEE Annual Conference and Exposition*, Seattle, Washington.
- Mamaril, N. A.**, Economy, D. R., Usher, E. L., & Kennedy, M. S. (2013). An examination of students' motivation in engineering service courses. *Proceedings of the 2013 Frontiers in Education Conference, Oklahoma*, 1825-1827. doi: 10.1109/FIE.2013.6685152
- Gaffney, J. D. H., Housley Gaffney, A. L., Usher, E. L., & **Mamaril, N. A.** (2013). How an activity-learning class influences physics self-efficacy in pre-service teachers. *Proceedings of the American Institute of Physics - Physics Education Research Conference 1513*, 134-137. doi: 10.1063/1.4789670

TECHNICAL PAPERS

- Crabtree, J. D., & **Mamaril, N. A.** (2008). *Preliminary evaluation of USDOT number readers and license plate readers at Kentucky weigh stations* (KTC-08-27/RSF20-06-1I). Lexington, Kentucky: University of Kentucky, Kentucky Transportation Center.
- Crabtree, J. D., Wallace, C. Y., & **Mamaril, N. J.** (2008). *Technology scan for electronic toll collection* (KTC-08-15/SPR359-08-1F). Lexington, Kentucky: University of Kentucky, Kentucky Transportation Center.

PRESENTATIONS

- Chen, X. Y., Roeder, M. L., Johnson, A. A., **Mamaril, N. A.**, & Usher, E. L. (2018, August). *Sources of engineering self-efficacy in undergraduate engineering: An analysis of open-ended responses*. Paper accepted for presentation at the meeting of the American Psychological Association, San Francisco, California.
- Li, C. R., Usher, E. L., **Mamaril, N. A.**, Chen, X. Y., Roeder, M. L., Bohac, S. W., Chenot, S. B., & Kennedy, M. S. (2016, August). *Sources of self-efficacy in engineering students*. Poster presented at the meeting of the American Psychological Association, Denver, Colorado.
- Cross, K. J., Johnson, N. E., **Mamaril, N. A.**, & Herman, G. L. (2016, June). Understanding how a culture of collaboration develops among STEM faculty. *Proceedings of the 2016 ASEE Annual Conference and Exposition*, New Orleans, Louisiana.
- Usher, E. L., **Mamaril, N. A.**, Li, C. R., Economy, D. R., & Kennedy, M. S. (2015, June). Sources of self-efficacy in undergraduate engineering. *Proceedings of the 2015 ASEE Annual Conference and Exposition*, Seattle, Washington.
- Usher, E. L., Economy, D. R., **Mamaril, N. A.**, Li, C. R., Sharp, J., & Kennedy, M. S. (2015, June). Undergraduate students' materials science and engineering self-efficacy: Assessment and implications. *Proceedings of the 2015 ASEE Annual Conference and Exposition*, Seattle, Washington.
- Li, C. R., Toland, M. D., Usher, E. L., & **Mamaril, N. A.**, (2015, April). *The Short Grit Scale: Dimensionality analyses*. Poster to be presented at the meeting of the American Educational Research Association, Chicago, Illinois.
- Mamaril, N. A.**, Usher, E. L., Economy, D. R., & Kennedy, M. S. (2014, April). *Identifying the sources of undergraduate engineering students' self-efficacy*. Poster presented at the annual meeting of the American Educational Research Association, Philadelphia, Pennsylvania.
- Mamaril, N. A.**, Usher, E. L., Economy, D. R., & Kennedy, M. S. (2014, April). *Measuring undergraduate students' engineering self-efficacy: A scale validation study*. Paper submitted for presentation at the 2014 Spring Research Conference, Cincinnati, Ohio.
- Li, C. R., Conway, A. E., Kim, A., Butz, A. R., **Mamaril, N. A.**, & Usher, E. L. (2014, April). *Sources of academic and self-regulatory self-efficacy of at risk students in an alternative school environment*. Poster presented at the Spring Research Conference, Cincinnati, Ohio.

- Mamaril, N. A.**, Economy, D. R., Usher, E. L., & Kennedy, M. S. (2013, October). *An examination of students' motivation in engineering service courses*. Paper presented at the 43rd Annual Frontiers in Education Conference, Oklahoma City, Oklahoma.
- Mamaril, N. A.**, Maxson, T. T., Cooper, R. E., Turpin, J. A., Usher, E. L., Gaffney, J. D. H., & Housley Gaffney, A. L. (2013, April). *Investigating preservice teachers' physics teaching self-efficacy: A mixed method approach*. Paper presented at the 2013 Spring Research Conference, Lexington, Kentucky.
- Mamaril, N. A.**, Waiters, B. L., Deatrlick, E. E., Economy, D. R., Usher, E. L., & Kennedy, M. S. (2013, April). *Sources of undergraduate students' engineering self-efficacy: A qualitative study*. Paper presented at the 2013 Spring Research Conference, Lexington, Kentucky.
- Usher, E. L., **Mamaril, N. A.**, Gaffney, J. D. H., & Housley Gaffney, A. L. (2012, April). *Building education majors' confidence for teaching physics*. Poster presented at the annual meeting of the American Educational Research Association, Vancouver, British Columbia, Canada.
- Mamaril, N. A.**, Usher, E. L., & Coyle, B. A. (2012, March). *Academic self-handicapping and self-efficacy as predictors of mathematics achievement of African American middle school students*. Poster presented at the 2012 Spring Research Conference, Louisville, Kentucky.
- Mamaril, N. A.**, Usher, E. L., Gaffney, J. D. H., & Gaffney, A. L. H. (2012, February). *Building education majors' confidence for teaching physics*. Paper presented at the Third Annual University of Kentucky STEM Symposium, Lexington, Kentucky.
- Gaffney, J. D. H., **Mamaril, N. A.**, Housley Gaffney, A. L., & Usher, E. L. (2011). *Improving physics self-efficacy in pre-service teachers*. Paper presented at the PERC Annual Conference, Omaha, Nebraska.
- Thomas, M. K., Usher, E. L., & **Mamaril, N. A.** (2011, August). *Investigating the relationship between teacher feedback and student self-efficacy*. Poster presented at the 119th American Psychological Association Convention, Washington, D.C.
- Mamaril, N. A.**, Brueggeman, B., Willett, T., Lynch, A., Thomas, M. K., & Usher, E. L. (2011, April). *Investigating the relationship between teacher feedback and student self-efficacy*. Poster presented at the 2011 Spring Research Conference, Cincinnati, Ohio.
- Mamaril, N. A.**, & Usher, E. L. (2010, August). *Through the pipeline: A qualitative study of women's engineering self-efficacy*. Paper presented at the 118th American Psychological Association Annual Convention, San Diego, California.
- Mamaril, N. A.** (2010, April). *Development and validation of an engineering self-efficacy scale for college students*. Paper presented at the Spring Research Conference, Lexington, Kentucky.
- Mamaril, N. A.** (2009, October). *The plight of African American students in engineering programs*. Paper presented at the Mid-Western Educational Research Association (MWERA) Annual Meeting, Sheraton Westport Chalet, St. Louis, Missouri.

Mamaril, N. J. A. (2009, April). *Through the pipeline: A qualitative study of women's self-beliefs in engineering*. Paper presented at the Spring Research Conference, University of Louisville, Kentucky.

Mamaril, N. J., & Royal, K. D. (2008, October). *Women and minorities in engineering: A review of the literature*. Paper presented at the Mid-Western Educational Research Association (MWERA) Annual Meeting, Westin Great Southern Hotel, Columbus, Ohio.

HONORS AND RECOGNITION

Excellent Teacher List, University of Illinois at Urbana-Champaign, Fall 2020, Spring 2023

Honorary Knight of St. Patrick, University of Illinois at Urbana-Champaign, 2018.

Pathfinder Award for Epoxy Coating for Aluminum-Titanium-Carbon Jigs, 3M International, 2006.

Technical Employee of the Year, 3M Philippines, Inc., 2003.

Best Six Sigma Growth Project, 3M Philippines, Inc., 2003.

PROFESSIONAL DEVELOPMENT

Service

Member, NSF ADVANCE Proposal Assessment Advisory Group, 2022-
Reviewer, NSF Panel, 2022

Manuscript reviewer, *PLOS ONE*, 2023-

Manuscript reviewer, *Scholarship and Practice of Undergraduate Research*, 2023-

Manuscript reviewer, *Journal of Women and Minorities in Science and Engineering*, 2019-

Manuscript reviewer, *Journal for STEM Education Research*, 2019-

Manuscript reviewer, *Journal of Engineering Education*, 2015 - present

Manuscript reviewer, *Mid-Western Educational Researcher*, 2008 - 2010, 2015 - present

Manuscript reviewer, *Safety Science*, 2017

Manuscript reviewer, *British Journal of Educational Psychology*, 2017

Manuscript reviewer, *Journal of Applied Research in Memory and Cognition*, 2016

Manuscript reviewer, *Educational Studies in Mathematics*, 2014

Manuscript reviewer, *IEEE Transactions on Education*, 2013 and 2014

Co-reviewed articles with Dr. Usher for the *Journal of Educational Psychology* (2009) and for the *Journal of Engineering Education* (2011)

Session Moderator, Educational Research and Methods Division, *ASEE Conference*, 2019

Technical Program Committee Reviewer, *International Conference on Education*, 2017

Technical Program Committee Reviewer, *IEEE Frontiers in Education*, 2013, 2017

Technical Program Committee Reviewer, *International Conference on Art, Business, Education, and Social Sciences*, 2017

Proposal reviewer, *Frontiers in Education Conference*, 2013 - 2017

Proposal reviewer, *American Psychological Association*, Division 15, 2012, 2013

Affiliate Member, IDEA Institute, University of Illinois at Urbana-Champaign

Member, Institutional Undergraduate Research Data Collection and Assessment Working Group

Affiliate, Engineering Ambassadors, University of Illinois at Urbana-Champaign

Member, Advisory Board of the Office of Undergraduate Research, University of Illinois at Urbana-Champaign

Member, Search Committees, University of Illinois at Urbana-Champaign

Member, Engineering Education Research Group, University of Illinois at Urbana-Champaign

Volunteer Observer, New Faculty Program, Academic Excellence in Engineering Education, University of Illinois at Urbana-Champaign

Staff, Association for the Assessment of Learning in Higher Education, 2010 - 2012

Affiliations

Council on Undergraduate Research, 2015 - present

American Society for Engineering Education, 2015 - present

COLLEGE TEACHING EXPERIENCE

AY 2019 – 2020 ENG 177 GFX Research Scholars

AY 2020 - 2021 University of Illinois at Urbana-Champaign, *Instructor*

AY 2021 - 2022

AY 2022 - 2023

Fall ENG 199 UGR/ISR Undergraduate Research Seminar

2015 - 2023 University of Illinois at Urbana-Champaign, *Instructor*

Fall 2017 Technical Communication for Engineering Ambassadors (ENG 198/ENG 110),
2018, 2019, University of Illinois at Urbana-Champaign, *Invited Lecturer*
Spring 2020
Spring 2016

Fall 2015 Road Map to Graduate School (ENG 298; GMAP), *Course Coordinator*

Fall 2017, 2018 Road Map to Graduate School (ENG 298; GMAP), *Invited Lecturer*
2019, 2021

Fall 2010 Introduction to Educational Psychology (EDP 548), University of Kentucky,
Teaching Assistant