

The Center for Adaptive Systems of Brain-Body Interactions (CASBBI) NSF Research Traineeship (NRT) program at George Mason University aims to prepare 100 graduate students across five cohorts to take on society's "wicked problems." In the one-year traineeship students learn how to meaningfully engage with stakeholder communities and to work together across traditional academic boundaries to integrate knowledge and develop viable solutions. The program is funded by the National Science Foundation (DGE 1922598) and is led by PI Siddhartha Sikdar (Bioengineering), along with co-PIs Nathalia Peixoto (Electrical and Computer Engineering), Padmanabhan Seshaiyer (Mathematical Sciences), Huzefa Rangwala (Computer Science) and James Thompson (Psychology).

The CASBBI NRT program involves a summer boot camp, hands-on data science workshops, a year-long community-engaged design project, and professional development in team science, leadership, communication, ethics, and entrepreneurship skills. The program's activities are structured to cross-train graduate students from engineering, data science, and social science disciplines to:

1. define a problem from multiple perspectives based on disciplinary knowledge, lived experiences, and community knowledge
2. utilize design thinking principles to break down open-ended problems
3. develop creative solutions by adapting and applying theories and methodologies from different disciplines
4. communicate effectively with stakeholders and broad audiences
5. work productively on diverse multidisciplinary teams

The first cohort of 11 students started in June 2020 and completed their traineeship in May 2021. The students represented seven disciplines (bioengineering, clinical psychology, cognitive and behavioral neuroscience, computer science, special education, nursing, and social work) and completed three community-engaged team projects. External program evaluation found that students' self-reported convergent research, community engagement and socio-skills, professional skills, communication, and career preparedness skills significantly increased from baseline to post-NRT. The program also engaged nearly 50 faculty and administrators from 19 departments and more than 30 external partners representing more than 20 organizations.

Trainees completed their projects as part of the newly implemented two-course sequence PROV 801 and 802: Community-engaged Interdisciplinary Methods I and II. The cohort was challenged with the following prompt: Understand the impact of COVID-19 on individuals with disability. The trainees engaged in design thinking and worked in teams with community stakeholders to formulate research questions and develop collaborative solutions. Over the course of the year, the cohort conducted more than 50 interviews with community stakeholders. The teams disseminated their findings in May 2021 at the public NRT Retreat. Their projects were titled: RISE-OUT: Risks and socio-ecological factors associated with opioid use treatment, Students with disabilities in COVID-19: Parents' perspective, and IMPACT-PD: Improving messaging between patients and their care team in Parkinson's Disease.

For more information, please contact NRT Program Director Siddhartha Sikdar at ssikdar@gmu.edu.