# The Autism Self-advocacy Center for Equity and Neurodiversity in Engineering (A-SCENE): Proposed Research Questions Pertaining to Student Academic Success, Experiential Learning, and Employment

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Abstract: The Autism Self-advocacy Center for Equity and Neurodiversity in Engineering (A-SCENE) is a new pilot program through a collaboration that includes Vanderbilt University, University of Connecticut, and Northeastern University as core partners. A-SCENE is a collaboration links our schools' engineering academic programs, experiential learning programs, and workforce pathways, including training of employers for neuroinclusive workplaces. Our vision is to create a model for a comprehensive and fully interconnected system of programs and supports to ensure that neurodiverse students can access and succeed in engineering majors and careers, from the undergraduate experience to graduate training and professional development to meaningful engagement in the STEM workforce. Programmatically, A-SCENE is based on emerging best practice, but we now also have articulated a set of potentially interesting research questions that can be explored in conjunction with executing the program with a large sample of neurodivergent engineering students across multiple institutional contexts and identities.

The envisioned programmatic components of the full A-SCENE program are depicted in the Venn diagram below. We have articulated 3 potentially interesting research questions spanning the programmatic domains of the project, focusing on those most directly related to employment outcomes, as follows.
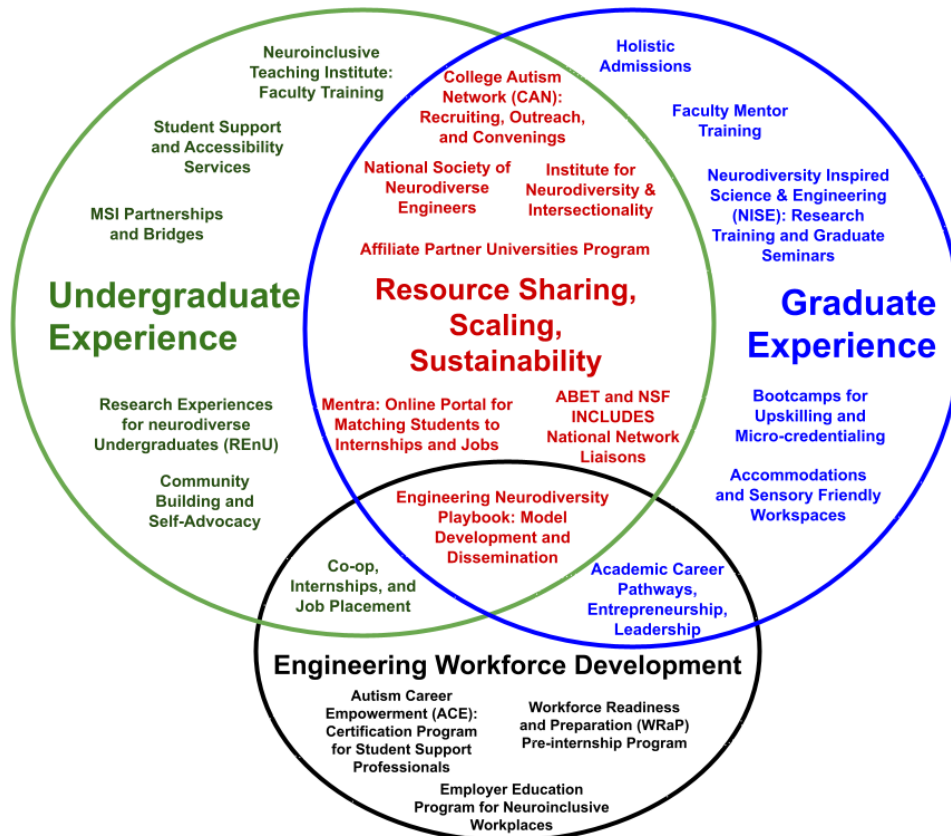
1) **Academic Success:** We have developed a Neuroinclusion Teaching Institute for engineering faculty to learn best practices for teaching and supporting neurodivergent students in their classrooms. A possible research question might be: To what extent does exposure to the Neuroinclusion Teaching Institute intervention improve academic outcomes for neurodivergent learners? Relevant metrics to track include: instructor reported comfort with and preparation for supporting neurodivergent students (surveys pre- and post-institute, followed by an additional survey after next academic term), student acquisition of employment relevant training experiences (compared with pre-intervention baseline), and student persistence to degree (compared with pre-intervention baseline).

2) **Experiential Learning:** Research question: How does neurodiversity awareness and inclusion training for COE co-op faculty affect their perceived ability to support neurodivergent students in obtaining a co-op, ability to support neurodivergent students while on co-op and obtaining employment after graduation. We have done pre-tests with COE co-op/internship faculty to measure perceived ability to support and post-test results will be compared with the pre-test baseline.

3) **Employment:** We have developed a program of education/training for managers and employers at major Engineering and/or Fintech firms, intended to improve access to careers for neurodivergent students and to enhance neuroinclusion in the workplace. A possible research question might be: To what extent does exposure to the employer training intervention improve outcomes for neurodivergent hires, including initial hire, retention, and satisfaction? Another might be: To what degree does training faculty and companies *jointly* impact successful employment outcomes? Relevant measures include the number of neurodivergent students hired as compared to baseline measures pre-intervention. Outcomes from the intervention delivered to companies only will be compared to those from the intervention delivered jointly to companies and faculty.