# Pursuing Intentional Design of Global Engineering Programs

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Motivation: Why study engineering?

Engineering **problems** and **projects** are increasingly global in scope
Engineers will need to **collaborate** with people from around the world
Engineering education does not traditionally offer **opportunities to learn global skills**
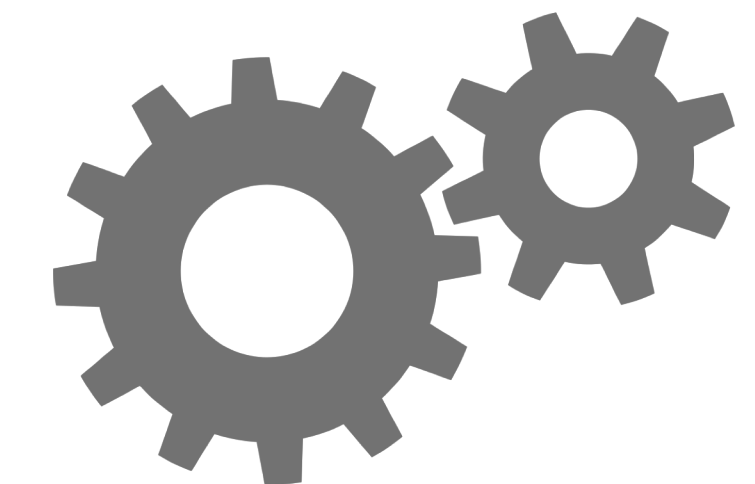
Guiding Question: How can we design **effective global experiences** for engineers?

Study One

Assessing Global Engineering Competency

Prior Work
- **GEC Framework** was developed through case studies and interviews with practicing engineers.
- To assess these skills, 6 **scenario-based questions** were developed from the interviews.
- An initial validation analysis was conducted with **practicing engineers**.

Participants

100 students who have studied abroad **in China**	100 students who have studied abroad **elsewhere**	100 students who have **not** studied abroad

Methods
Survey including the 6 GEC scenarios, GPI, CQS, Chinese culture questions, personality inventory, and demographic questions.
Compare across student groups and compare to the existing data from practicing engineers.

Study Two

Exploring the Influence of Program Destination on Learning

Rising Sophomore Abroad Program

Spring semester 3-credit general education course on **Global Engineering Practice**	**+**	Two-week **trips abroad**: visiting companies, universities & cultural sites

2018 Participants: 155 students across seven tracks

Case Studies: Comparing Across Tracks
Using Hofstede's model of national culture, we will group tracks based on **cultural distance** from the US:

Low	**Med**	**High**
Australia New Zealand UK/Ireland	South Africa Europe	China South America

Methods
Mixed-methods analysis: QUANT → QUAL → Mixed
Quant: Global Perspectives Inventory (Pre/Post)
Qual: Reflective Journals
Mixed: Characterize tracks with themes/trends

Analysis: Compare tracks within and across groups

Study Three

Identifying Global Experiences that are Significant to Students

Prior Work
- Recent focus on intervention-based program design and **intercultural competence** assessment
- Critiques suggest a need to learn more about **student experiences** and other learning outcomes

Participants

20-30 students from **short-term** programs

20-30 students from **research abroad** programs

20-30 students who spent a **semester** abroad

Methods
Critical-incident technique interviews used to explore a few key experiences for each student through in-depth descriptions.
Three rounds of coding will be used to identify themes and characterize groupings of incidents to distinguish significant types of experiences.