



Integrating International Experience into the Undergraduate Engineering Curriculum

Why?

- ABET competencies developed through international experience:**
 - An ability to identify, formulate, and solve engineering problems
 - An ability to communicate effectively
 - The broad education necessary to understand the impact of engineering solutions in a global and societal context
- Engineer of 2020 must have global perspective:**

“We aspire to a future where engineers are prepared to adapt to changes in global forces and trends and to ethically assist the world in creating a balance in the standard of living for developing and developed countries alike.” *National Academy of Engineering (2004)*
- CoE Commission on Undergraduate Education calls for:**
 - Collaboration skills – including teamwork and communication (technical, cross cultural, non-technical)
 - Contextual knowledge – human, social and global understanding; differences among human needs, values attitudes and social norms

Learning Goals

International experience helps students build:

- Cultural Knowledge**
 - Appreciation of different cultures
 - Understanding of daily life, social settings and use of technology in another country
 - Ability to analyze complex problems in global context
- Leadership and Professional Competencies**
 - Practical experience in adapting to new settings and viewing engineering problems from multiple perspectives
 - Independence, self-confidence and resourcefulness
- Communication skills**
 - Open-mindedness
 - Ability to observe new situations and formulate appropriate responses
 - Ability to reflect on human differences and articulate lessons learned

How?

Surveyed CoE students to assess interest and motivation

Key outcomes:

- Need for structure – space for international experience within the academic plan
- Desire for official recognition of international experience
- Concern about time to degree

Established International Minor for Engineers

- First minor in the history of the College; launched in September 2008
- Works within existing social science/humanities requirements to ensure timely graduation
- Easily-recognized credential for students and employers

Requirements

- 16-20 credits total
- Foreign language prerequisite
- Foreign language proficiency (4th semester college-level)
- International courses (non-U.S. cultures/countries)
- NEW International Engineering Seminar (ENGR 490)
- Relevant overseas experience

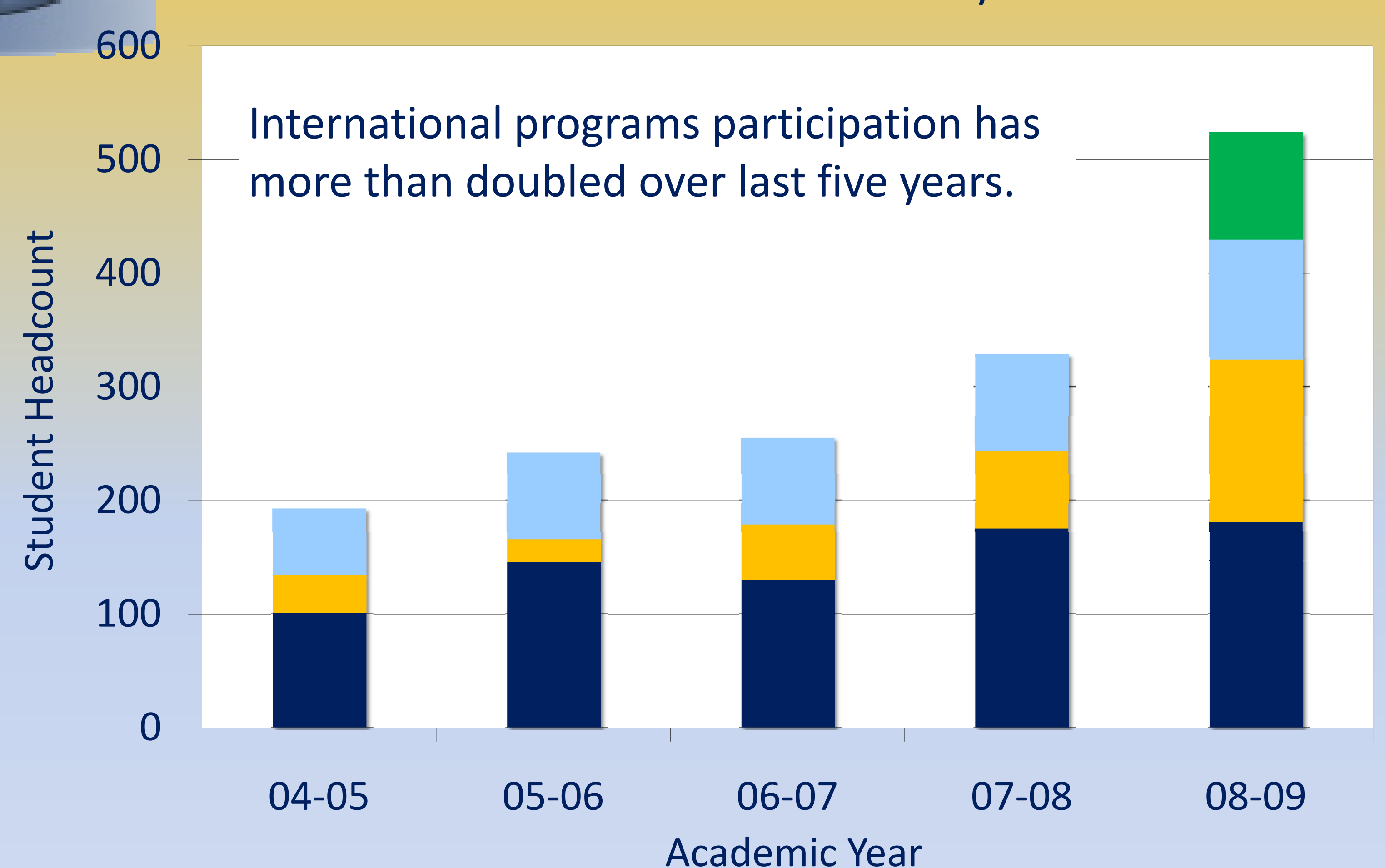
Created ENGR 490: International Engineering Seminar

- Introduce students to engineering in different national/regional contexts
- Develop intercultural awareness and communication strategies
- Build a cohort of engineering students who will study/work abroad during their UM careers

Lessons Learned

Strong student demand for integrated international experience

- International Minor
- Work Abroad
- EGL Honors Program
- Study Abroad



International programs participation has more than doubled over last five years.

- 100+ students enrolled in the minor; 130+ have taken ENGR 490
- ENGR 490 seminar is evolving into a course on “Cultural Intelligence for Engineers”
- Formal assessment of international experience learning outcomes will be needed as we scale up participation
- Significant CoE faculty involvement needed to build participation and emphasize relevance to engineering practice