



The Vertically Integrated Projects (VIP) Program: A Mechanism for Supporting Long-Term, Large-Scale, Multidisciplinary GCSP-Focused Undergraduate Research Experiences at any University

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The VIP Model

Unites undergraduate education and faculty research in a team-based context.

Course-based

- Students earn 1-2 credits each semester
- Credits count toward degree requirements
- Can participate multiple semesters/years

Projects

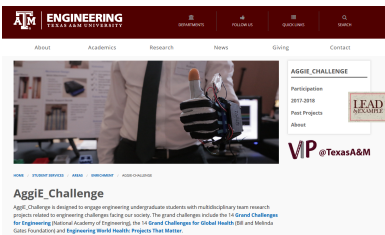
- Led by faculty, embedded in their research
- Long-term – 3 to 5 years minimum
- Large scale – enough work for team of students

Teams

- Multidisciplinary
- 10-20 students/team (average of 16 at GT)
- Sophomores, Juniors, Seniors, Grads
- Returning students help on-board new students (documentation, tutorials, etc.)

GCSP & VIP

Texas A&M – Major Component



Georgia Tech

Team List: <http://www.vip.gatech.edu/teams>

GCSP Teams Labeled by Team's Advisors

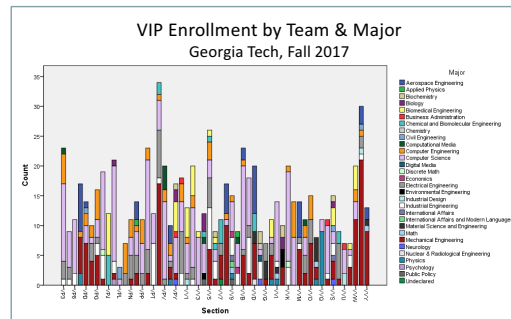
Examples:

- Engineering for Social Innovation (Water)
- Health Informatics on FHIR
- TerraBots (Urban Infrastructure)

VIP & GCSP Competencies

✓ Research/Creative

✓ Multidisciplinary



- In an analysis of Georgia Tech exit surveys, VIP students reported higher scores for the degree to which their Georgia Tech educations contributed to their ability to work in a multidisciplinary team, with a meaningful effect size ($t(1982) = 4.437, p < 0.001, d = 0.313$)
- Social network analysis of VIP peer evaluations showed that within teams, students interacted more often with students from other majors.

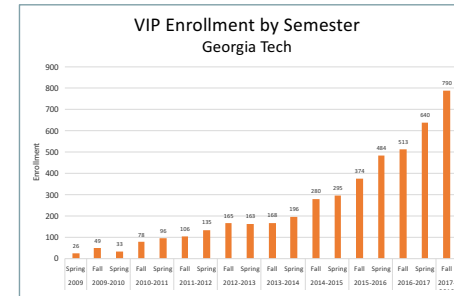
✓ Multicultural Aspect

- In an analysis of Georgia Tech exit surveys, VIP students reported higher scores for the degree to which their Georgia Tech educations contributed to their ability to work with people of diverse backgrounds, with a meaningful effect size ($t(1987) = 3.271, p = 0.001, d = 0.231$)
- Social network analysis of VIP peer evaluations showed that within teams, students interacted more often with students of other races/ethnicities.
- Georgia Tech's VIP program has maintained representative enrollment of black/African American and Hispanic students, with respect to the student population.

Scalable

Faculty to Student Ratio

- Average of 16 students per team
≈ faculty to student ratio at Georgia Tech



Minimal cost

- Teams embedded in existing research
 - Don't have to develop new course content
- No need to "bribe" faculty
 - Faculty benefit from teams' work
 - Teams contribute to education and broader impacts sections of proposals
 - They want to stay involved
- No student stipends
 - Students earn academic credit that can count towards graduation

Any University

VIP Model implemented at a variety of institutions:

- Research Universities
- Baccalaureate Colleges
- Large/Small Institutions
- Public/Private Institutions
- Historically Black Colleges and Universities
- Hispanic Serving Institutions
- US & International

The VIP Consortium

United States

- Arizona State University
- Boise State University
- Colorado State University
- Florida International University
- Georgia Institute of Technology
- Howard University
- Morehouse College
- New York University
- Purdue University
- Rice University
- Texas A&M University
- University of California, Davis
- University of California, Riverside
- University of Delaware
- University of Georgia
- University of Hawaii
- University of Michigan
- University of Washington
- Virginia Commonwealth University

International

- Inha University, South Korea
- Malmö University, Sweden
- National Dong Hwa Univ, Taiwan
- Riga Technical University, Latvia
- Universidad del Norte, Columbia
- Univ. of Pretoria, South Africa
- University of Strathclyde, United Kingdom