

**Systemic Reform of Higher Education:
The Vertically Integrated Projects
(VIP) Program and Consortium**

The logo for the VIP Program features the letters 'VIP' in a 3D, metallic font. The 'V' is dark grey, the 'I' is yellow, and the 'P' is dark grey. A silver ladder is positioned behind the 'V' and 'I', leaning against them. To the right of the 'VIP' logo, the word 'Program' is written in a large, black, serif font.

VIP Program

Director – Ed Coyle

Co-Director – Randal Abler

Executive Director– Julie Sonnenberg-Klein

Academic Program Manager – Chris Malbrue



Vertically Integrated Projects Program

Primary Goal of the VIP Program:
Involve Everyone on Campus in Innovation

What is Innovation?

“The development of novel products, services,
and processes for the benefit of society”

(Too Narrow!)

“Inspiration plus Execution”

(Works in all Disciplines!)



Vertically Integrated Projects Program

The Barriers: 3 Forms of Fragmentation

- By Mission
 - Research: Exploration, Idea Generation
 - Education: Knowledge, Skills
 - Service: Partnerships, Economic Development
- By Time
 - Semesters, Academic Years
- By Discipline
 - Budget Lines, Culture





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The VIP Approach: Foster Innovation by Involving Students in Challenging Projects Embedded in Faculty Research

Ensure Success by Providing the Necessary:

TIME



CONTEXT



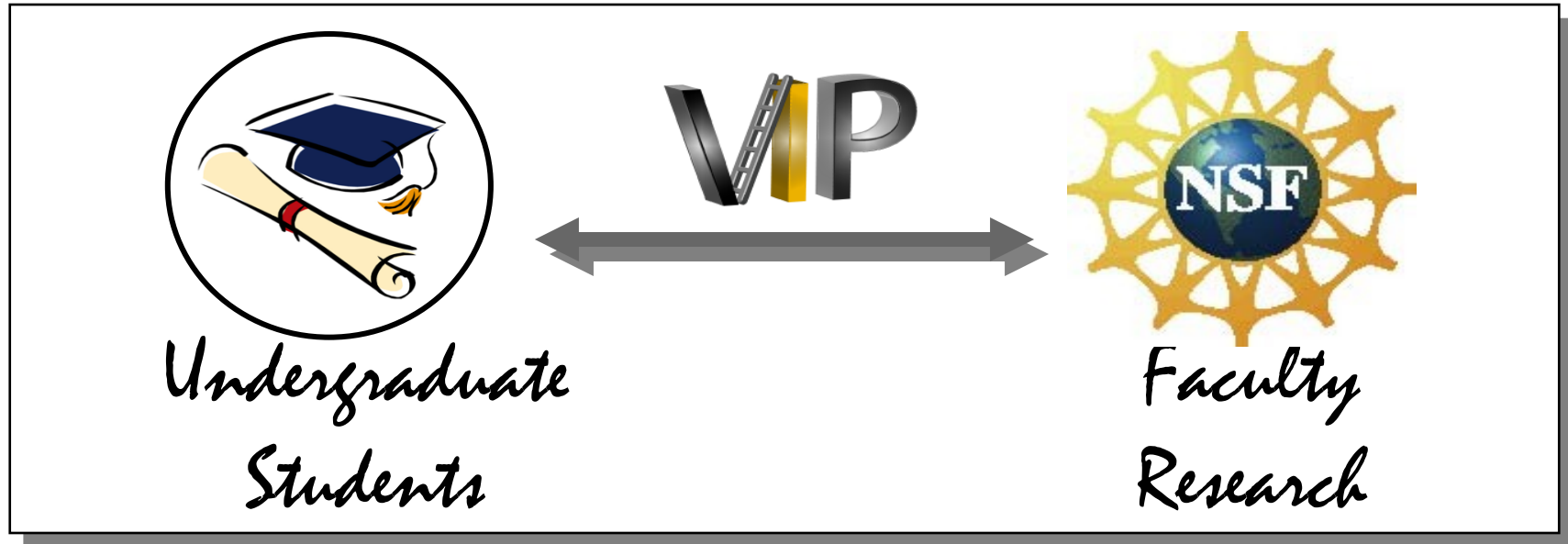
MENTORING





Vertically Integrated Projects Program

Bringing People Together



Students need Real Projects
in which they Experience
the Innovation Process

Faculty can Benefit from
Help at all Levels of
the Innovation Process



Vertically Integrated Projects Program

VIP Program Architecture

- Long-term, Large-scale Projects:
 - Projects led by faculty; embedded in their research
 - Large teams: 10-20 undergraduates; 1-4 grad students
 - 2nd year through 4th year students on every team
 - Long-term participation – up to 3 years per student
 - New students replace those who graduate
 - Teams continue for years, decades
 - Academic credit each semester





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Example: The 17 Year Old Stadium-IoPT VIP Team





Vertically Integrated Projects Program

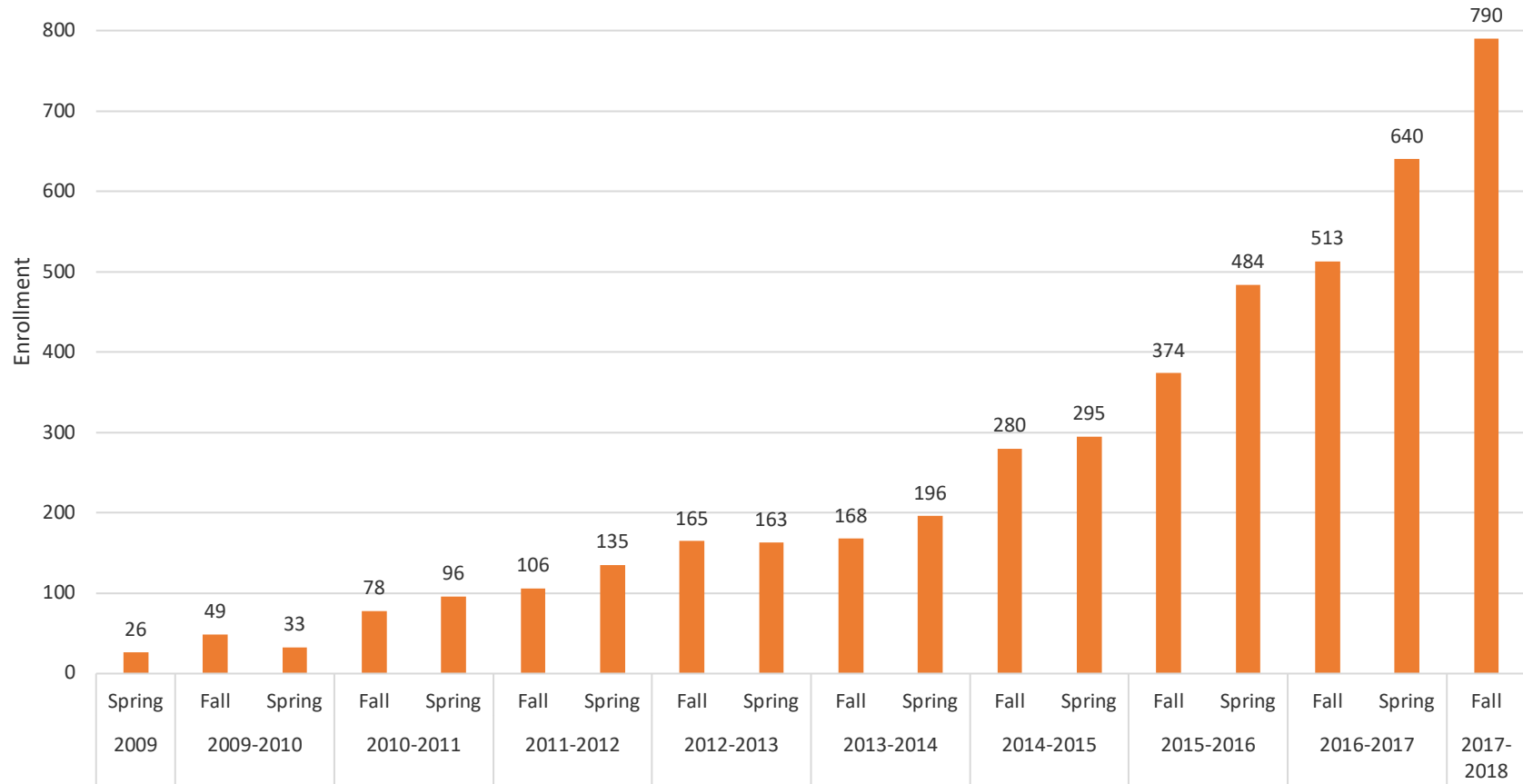
Georgia Tech VIP Teams: Fall 2017

- 61 Teams this Fall; 900 Undergraduates Enrolled Now
- Students and Faculty from Every GT College: Architecture, Business, Computing, Engineering, Liberal Arts, and Science
- List of GT VIP teams. Click on any team's icon to see a one-page description of that team and the list disciplines from which that team is seeking students:
<http://www.vip.gatech.edu/teams>
- Note the number of service-focused VIP teams



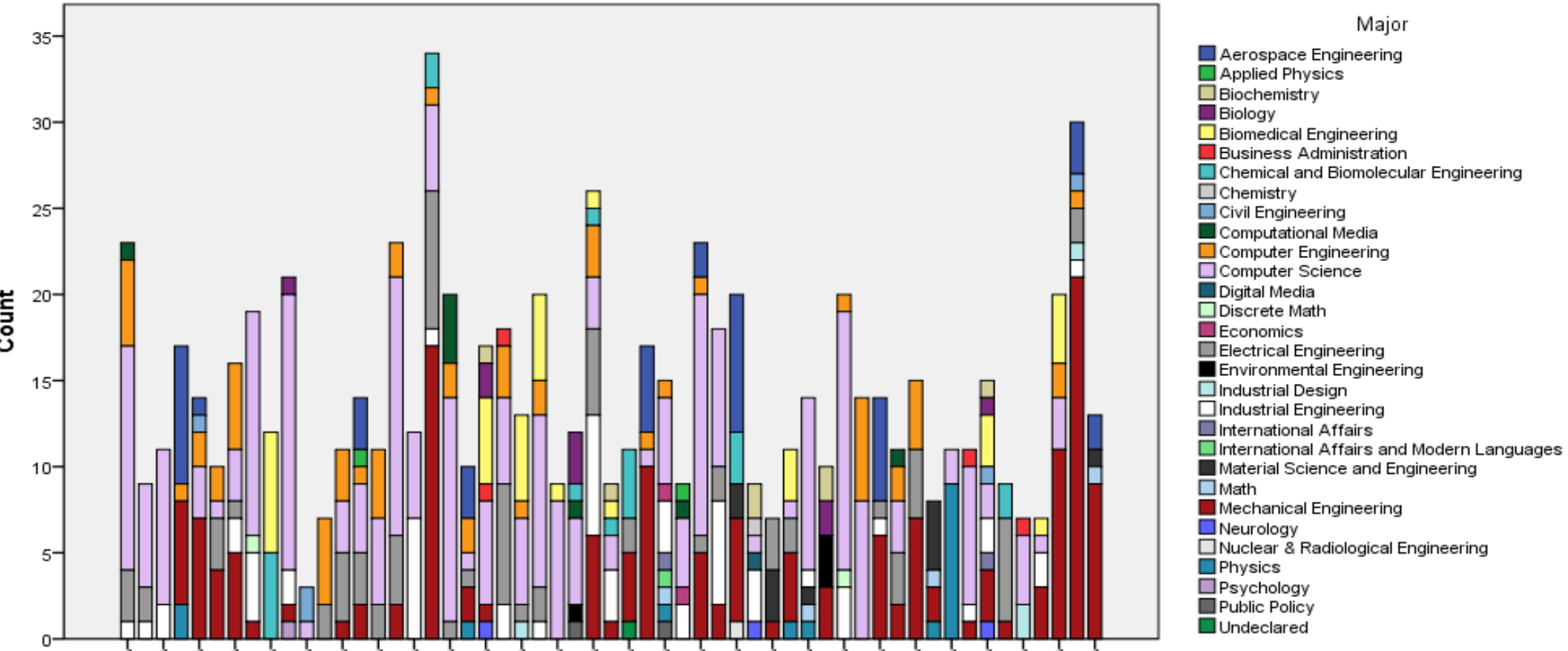
Vertically Integrated Projects Program

VIP Enrollment by Semester at Georgia Tech, 2009-17





Vertically Integrated Projects Program

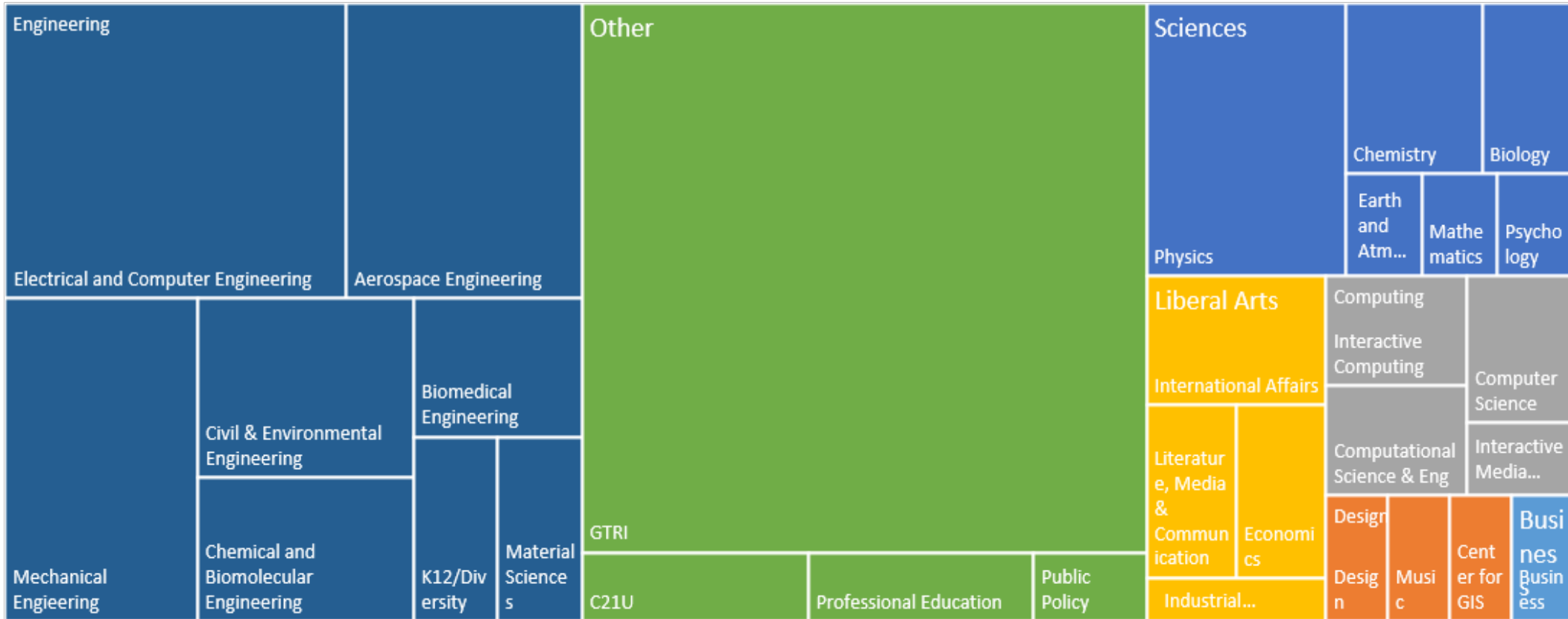


VIP Enrollment by Team & Major, Fall 2017



Vertically Integrated Projects Program

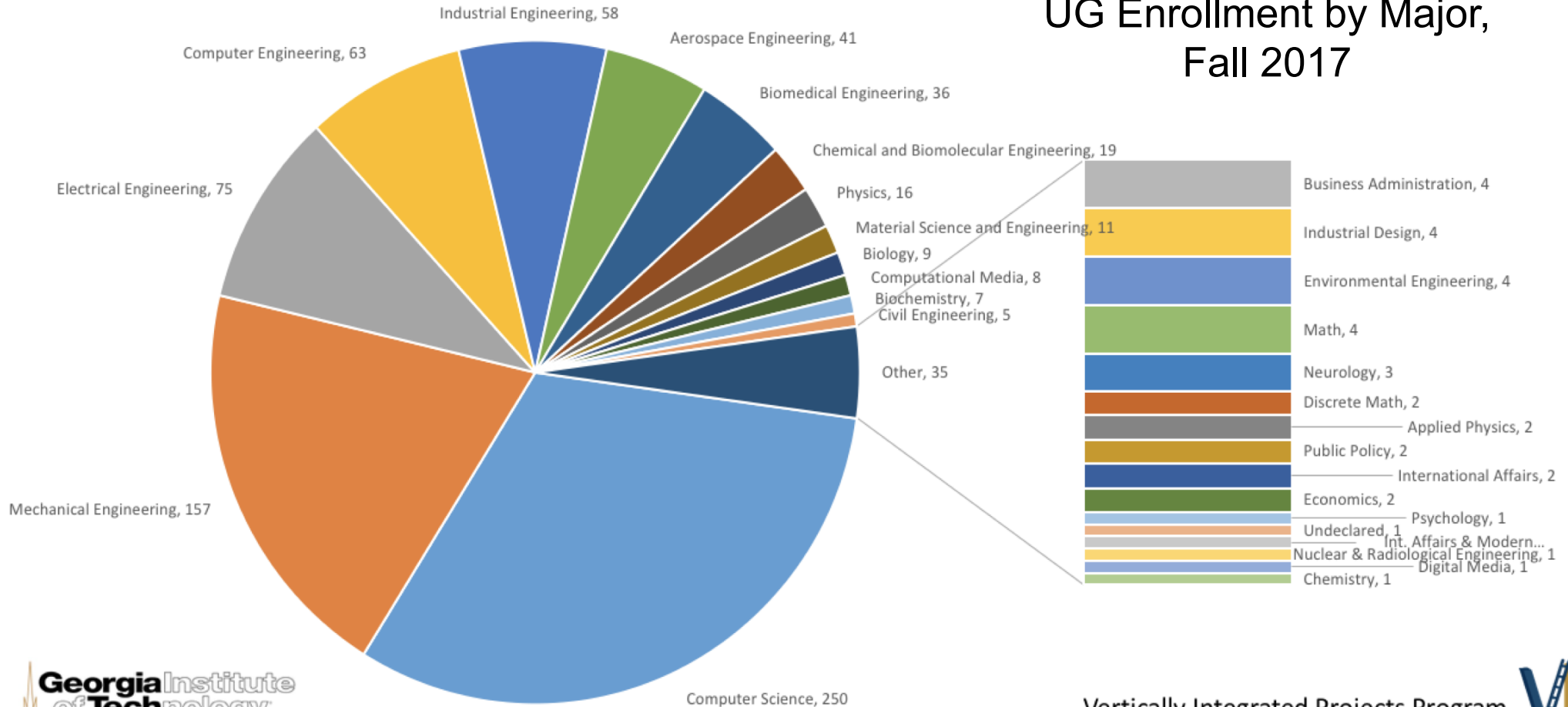
■ Business
 ■ Design
 ■ Computing
 ■ Liberal Arts
 ■ Sciences
 ■ Other
 ■ Engineering





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UG Enrollment by Major, Fall 2017





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VIP Course Structure

● VIP-X60Y

- X = Year: 2=Soph; 3=Junior; 4=Senior
- Y = Credits: 0, 1, 2, or 3 (0 is for-pay; others for-credit)
- Each course can be taken multiple times
- Currently: 2601 -- 3601, 3602 -- 4601, 4602, 4603
- 4813 for Senior Design, Project, Thesis, ...
- Each team is one section of every course
- No Auditors, Volunteers, or P/F Students
- Available to all Disciplines





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One Model for How VIP Credits Count

- Incentive to Participate Multiple Years
 - Take 5 or fewer credits:
 - All are Approved-Elective (Free-Elective) Credits
 - Take 6+ credits:
 - 3 to 6 Become Technical Elective Credits
 - Rest are Approved-Elective (Free-Elective) Credits
 - VIP + VIP Senior Design: 8+ Credits
 - 3+ Credits as a Junior
 - 2 Credits (4811) 1st-Semester Senior Year
 - 3 Credits of VIP Senior Design (4813)



Vertically Integrated Projects Program

Access and Diversity

- Credit bearing + counts toward degrees:
Enables *all* students to participate
- Joining teams:
No interviews; No GPA requirements; No prerequisites
- Unique among High-Impact Programs:
%URMs in VIP = % in overall student population.
- High Participation amongst Transfer Students



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Assessment

- Ongoing Study of Learning Outcomes and Impacts on Faculty, Depts, and Institutions.
 - Eval. Teams at Boise State, Georgia Tech, Univ. of Michigan
- Institutional Research:
 - Ability to work in a multidisciplinary team ($t(1982) = 4.437, p < 0.001, d = 0.313$);
 - Ability to work with individuals from diverse backgrounds ($t(1987) = 3.271, p = 0.001, d = 0.231$);
 - Understanding of technology applications relevant to your field of study ($t(2002) = 3.19, p = 0.001, d = 0.224$);



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VIP: Benefits to *all* Students

- Realistic Team Experience
- Opportunity to Learn/Master different Roles/Skills
- In-Depth Experience in their Field
- Multi-Disciplinary Experience
- Knowledge Exchange across many Boundaries
- Provide a Compelling Reason to be on Campus
- Preparation for Work / Grad School
- Understanding of the Innovation Process



Vertically Integrated Projects Program

VIP: Benefits to Universities

- Enhances Student Learning
- Enhances Faculty Research
- Enables New Partnerships
- Creates Multidisciplinary Opportunities
- Compelling Reason to have a Campus
- Everyone Participates in Innovation
- Deepens/Broadens the University Community



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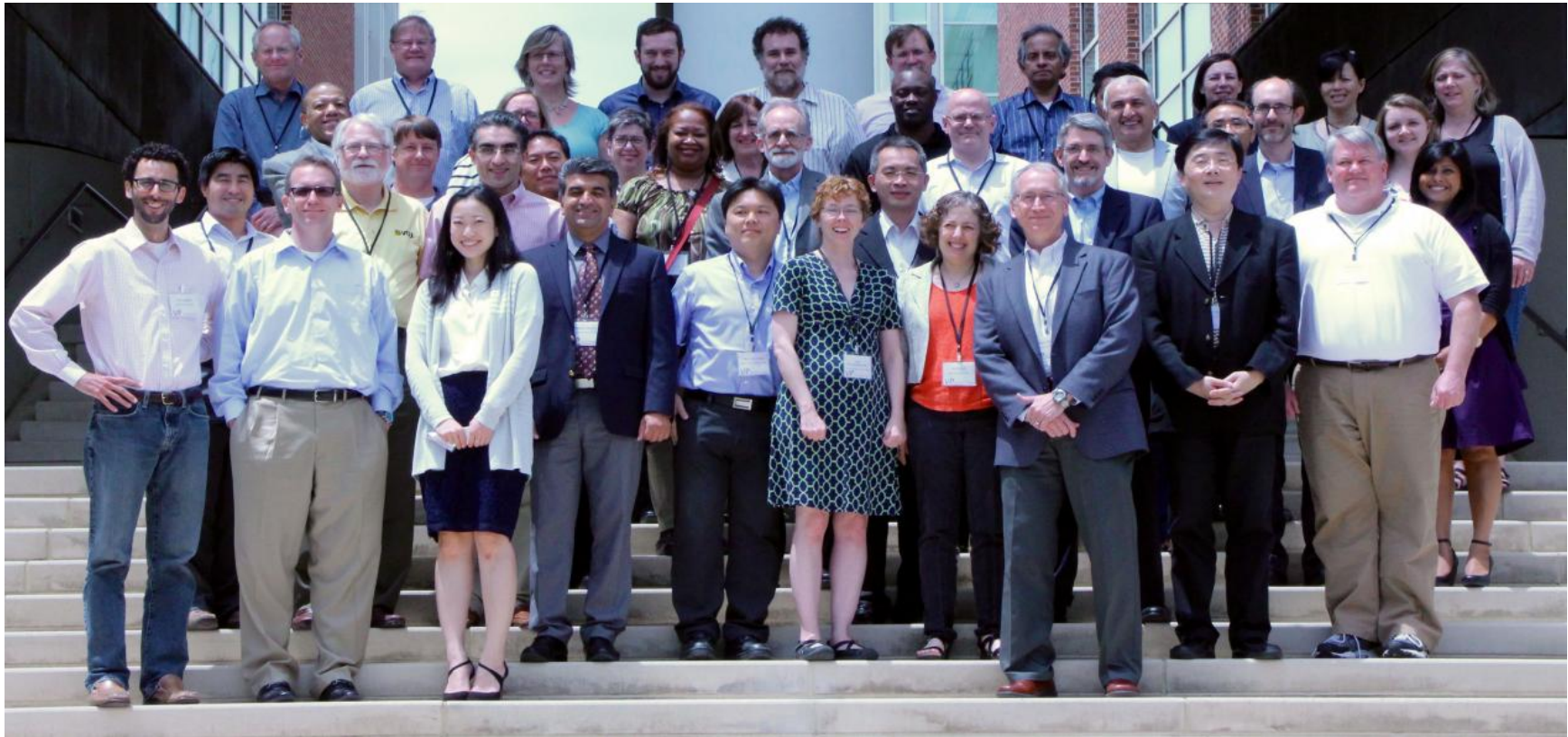
The VIP Consortium So Far:

- Arizona State Univ.
 - Boise State Univ.
 - Colorado State Univ.
 - Florida International U.
 - **Georgia Tech**
 - Howard Univ.
 - Inha Univ.
 - Malmö University
 - Morehouse College
 - Natn'l Dong Hwa Univ.
 - Natn'l Ilan University
 - New York University
 - Purdue University
 - Rice University
 - Riga Technical Univ.
 - Texas A&M Univ.
 - Universidad del Norte
 - UC Davis
 - Univ. of Pretoria
 - Univ. of Delaware
 - **Univ. of Georgia**
 - Univ. of Hawaii
 - Univ. of Michigan
 - Univ. of Strathclyde
 - Univ. of Washington
 - VA Commonwealth Univ.
- Pending:
- Drexel Univ.
 - Georgia State
 - NCA&T
 - Notre Dame
 - Tuskegee Univ.
 - UC Riverside
 - Virginia Tech
- Legend
- Non-US University
 - URM Serving Univ.
 - State of Georgia



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Annual VIP Consortium Meeting





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Essential Characteristics of VIP

- VIP Program Led by Faculty
- Projects embedded in Professors' Research Efforts
- Large-Scale Projects Lasting Years/Decades
- Multidisciplinary Teams Possible/Encouraged
- Program is Curricular; All Students Graded
- Incentives for Students to Participate for 2+ Years
- Classroom and Meeting Space Supporting Teams
- Learning Outcomes Include Development of both Disciplinary and Professional Skills



Vertically Integrated Projects Program

VIP Consortium Characteristics

- All Institutions Have a Professor-Led VIP Program
- Program Must Have Essential Elements of VIP but Adapt to Local Conditions
- Share Resources/Tools/Processes/etc.
- Everyone Contributes What They Can
- Participation in Evaluation and Dissemination
- Publish Papers and Write Proposals Together



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What could you do if you had a VIP team?



<http://vip.gatech.edu>

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