

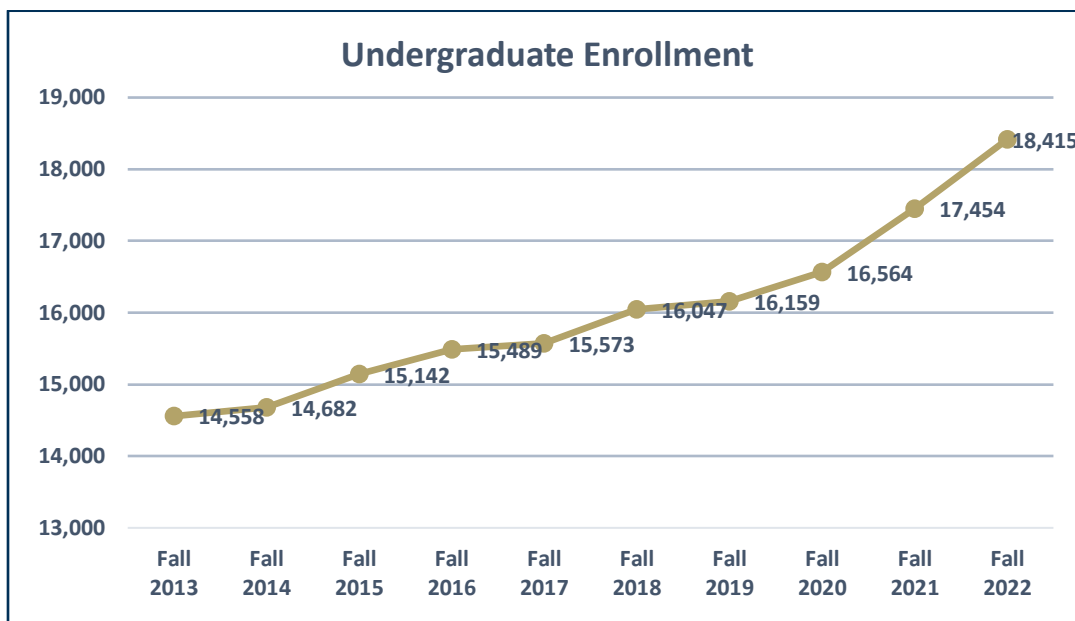
## Georgia Institute of Technology

Appendices – 2022 CCG Status Report, Georgia Tech

### Appendix A – Undergraduate Enrollment and Degrees Conferred

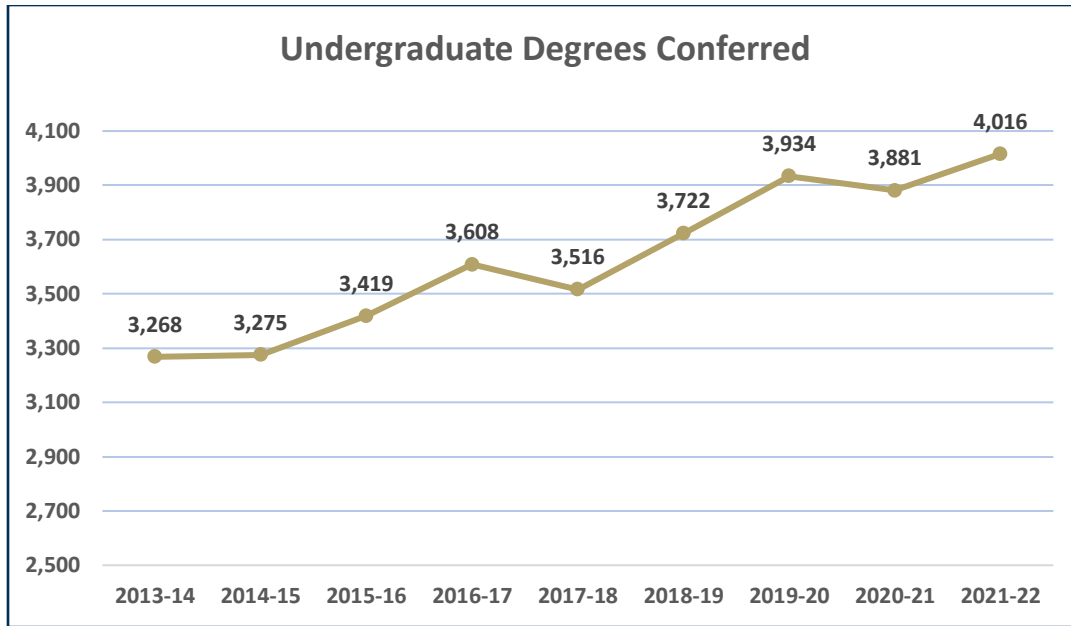
#### Undergraduate Enrollment

Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022
14,558	14,682	15,142	15,489	15,573	16,047	16,159	16,564	17,454	18,415



#### Undergraduate Degrees Conferred

2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
3,268	3,275	3,419	3,608	3,516	3,722	3,934	3,881	4,016



**Appendix B – Undergraduate Retention and Graduation Rates**

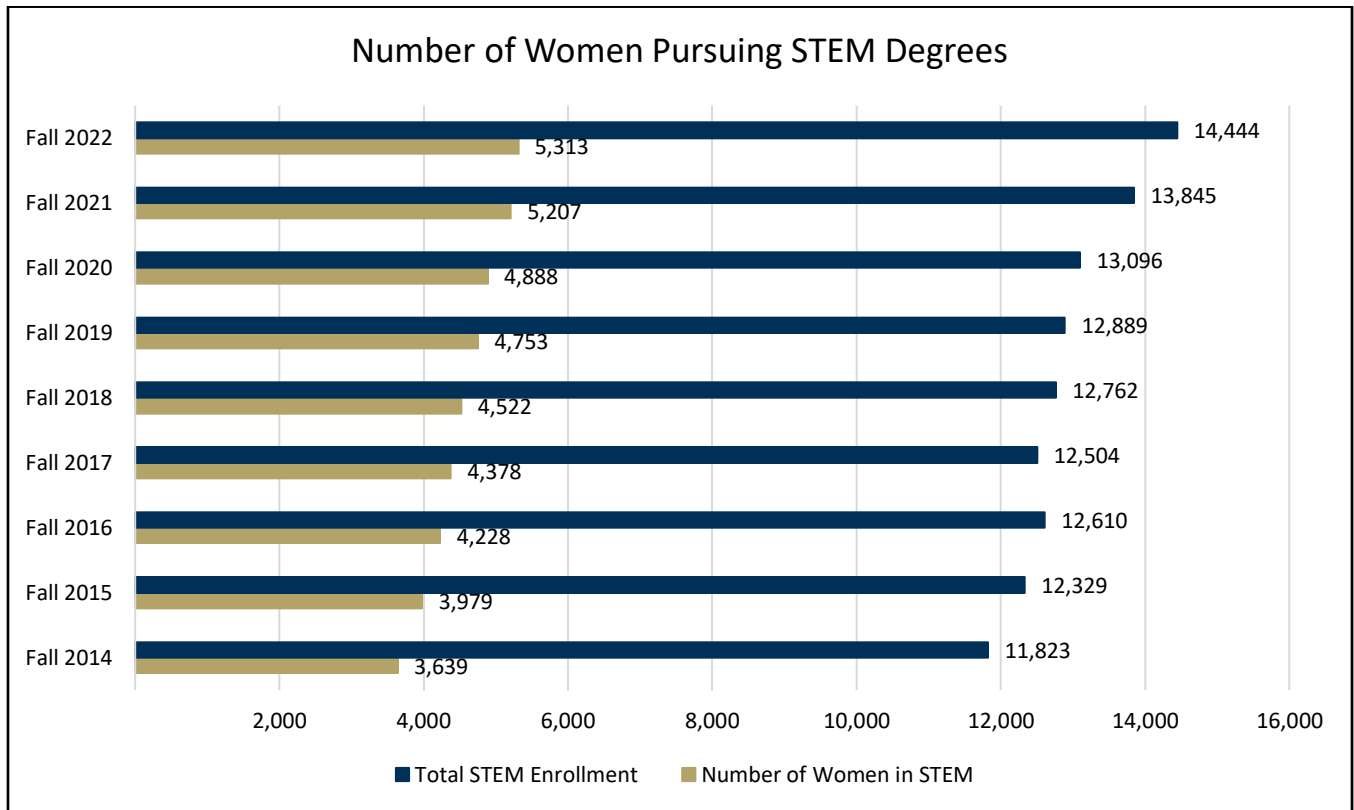
**First-Time, Full-Time Freshman Retention Rates**

<b>COHORT</b>	<b>1<sup>st</sup> to 2<sup>nd</sup> Year</b>
Fall 2009	94%
Fall 2010	95%
Fall 2011	95%
Fall 2012	96%
Fall 2013	96%
Fall 2014	97%
Fall 2015	97%
Fall 2016	97%
Fall 2017	97%
Fall 2018	97%
Fall 2019	97%
Fall 2020	97%
Fall 2021	98%

**First-Time, Full-Time Freshman Graduation Rates**

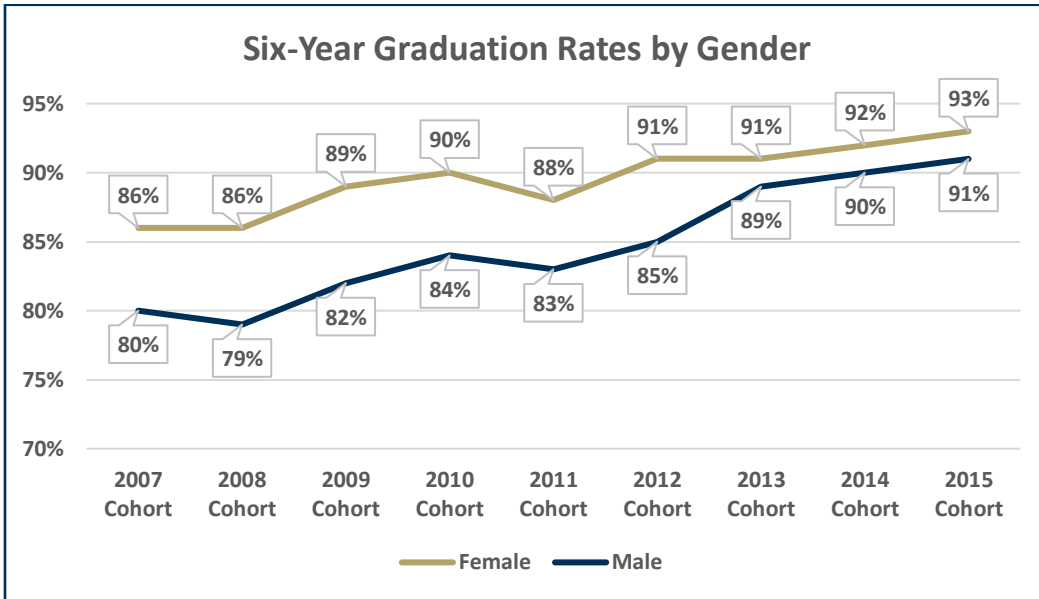
<b>COHORT</b>	<b>4-YR</b>	<b>5-YR</b>	<b>6-YR</b>	<b>8-YR</b>
Fall 2005	31%	72%	79%	81%
Fall 2006	33%	72%	79%	82%
Fall 2007	40%	76%	82%	84%
Fall 2008	36%	74%	81%	84%
Fall 2009	40%	78%	85%	87%
Fall 2010	41%	80%	86%	89%
Fall 2011	39%	80%	85%	88%
Fall 2012	40%	82%	87%	89%
Fall 2013	45%	85%	90%	92%
Fall 2014	46%	86%	91%	
Fall 2015	51%	89%	92%	
Fall 2016	55%	90%		
Fall 2017	57%			

**Appendix C – STEM Enrollment by Gender**



**Appendix D – Six-Year Graduation Rates by Gender**

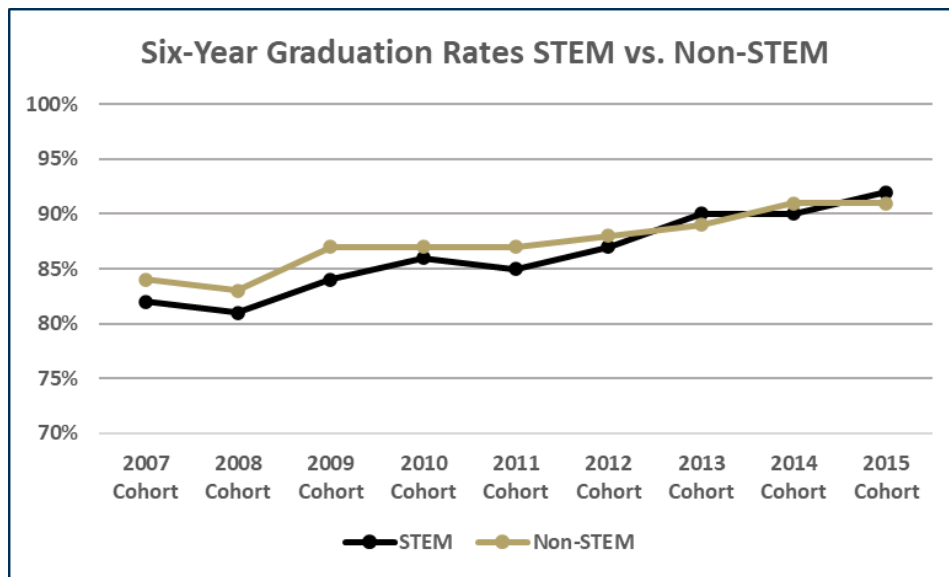
	2007 Cohort	2008 Cohort	2009 Cohort	2010 Cohort	2011 Cohort	2012 Cohort	2013 Cohort	2014 Cohort	2015 Cohort
<b>Female</b>	86%	86%	89%	90%	88%	91%	91%	92%	93%
<b>Male</b>	80%	79%	82%	84%	83%	85%	89%	90%	91%



**Appendix E – STEM Graduation Rates**

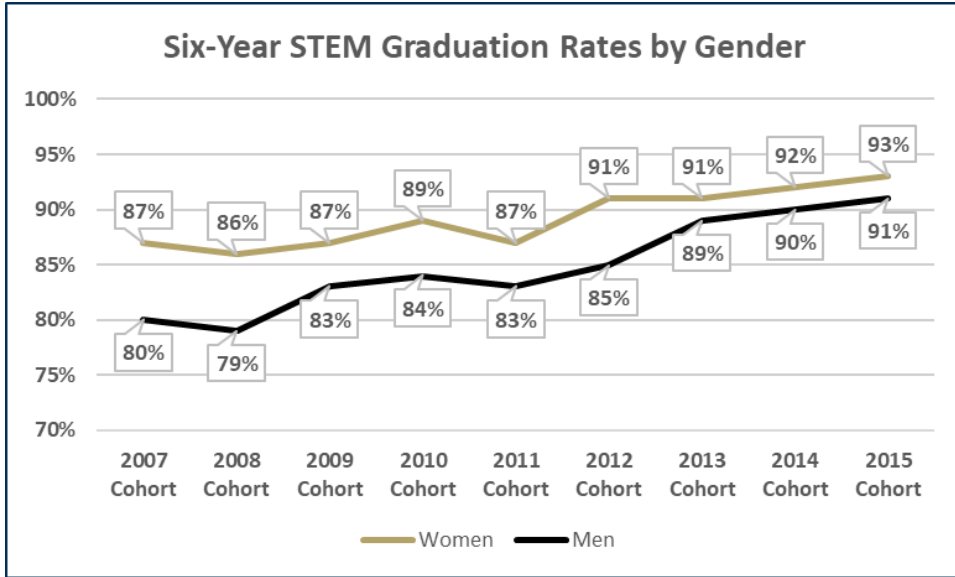
**Six-Year Graduation Rates STEM vs. Non-STEM**

	2007 Cohort	2008 Cohort	2009 Cohort	2010 Cohort	2011 Cohort	2012 Cohort	2013 Cohort	2014 Cohort	2015 Cohort
<b>STEM</b>	82%	81%	84%	86%	85%	87%	90%	90%	92%
<b>Non-STEM</b>	84%	83%	87%	87%	87%	88%	89%	91%	91%

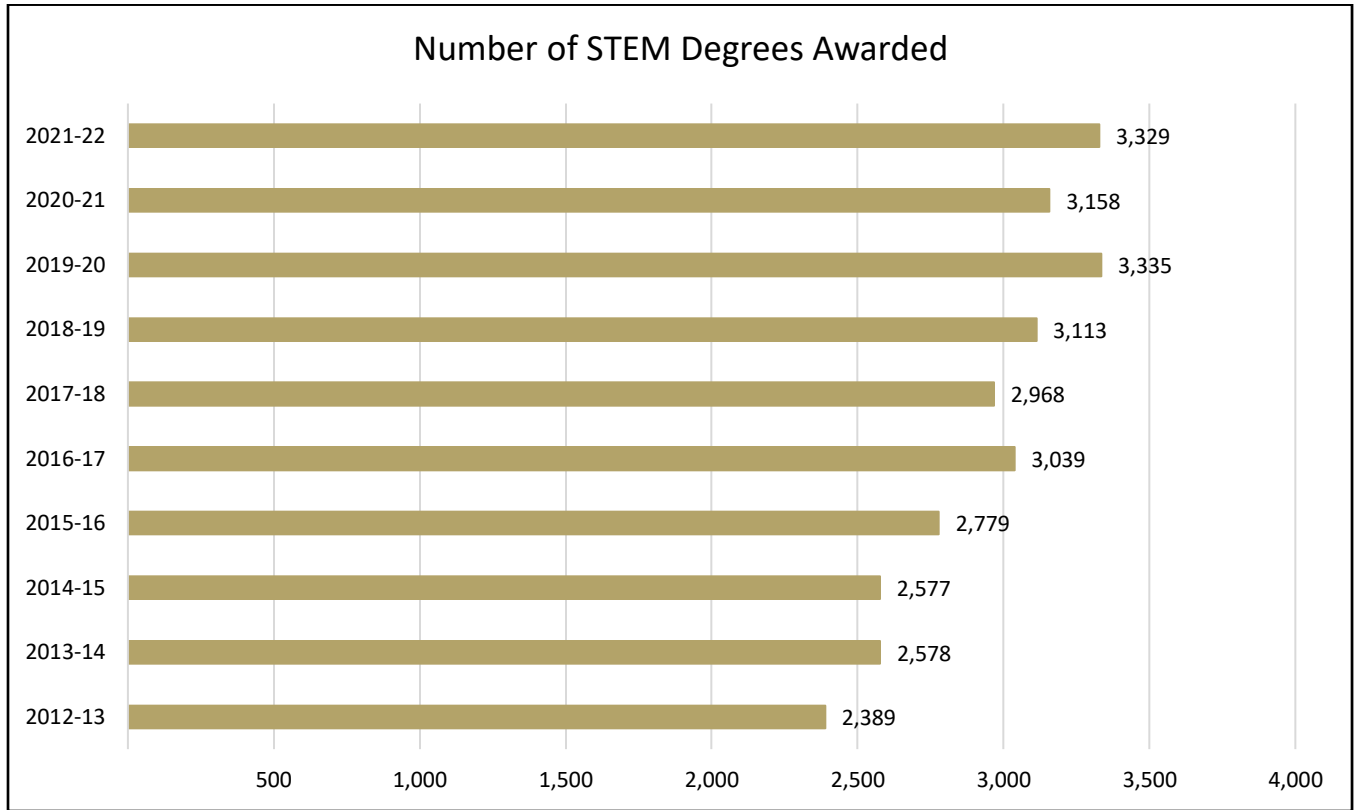


**Six-Year Graduation Rates for STEM Majors by Gender**

	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Women</b>	87%	86%	87%	89%	87%	91%	91%	92%	93%
<b>Men</b>	80%	79%	83%	84%	83%	85%	89%	90%	91%



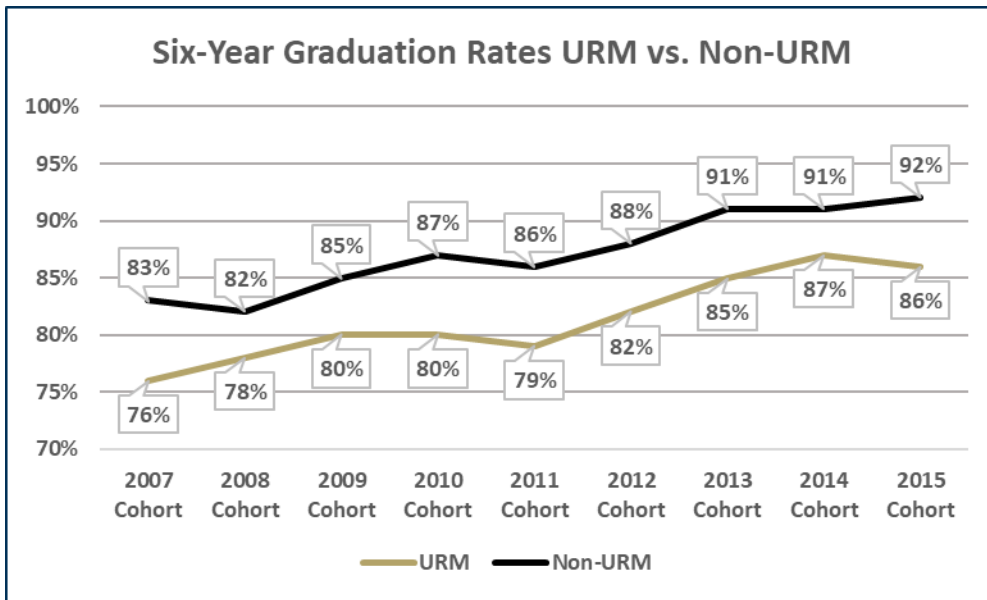
**Appendix F – STEM Degrees Awarded**





**Appendix G – URM Graduation Rates**

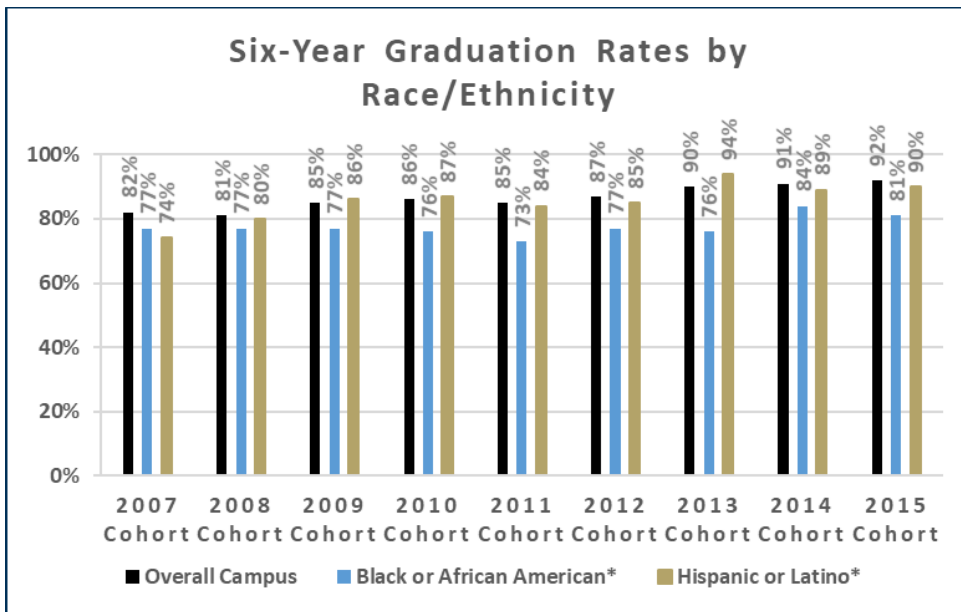
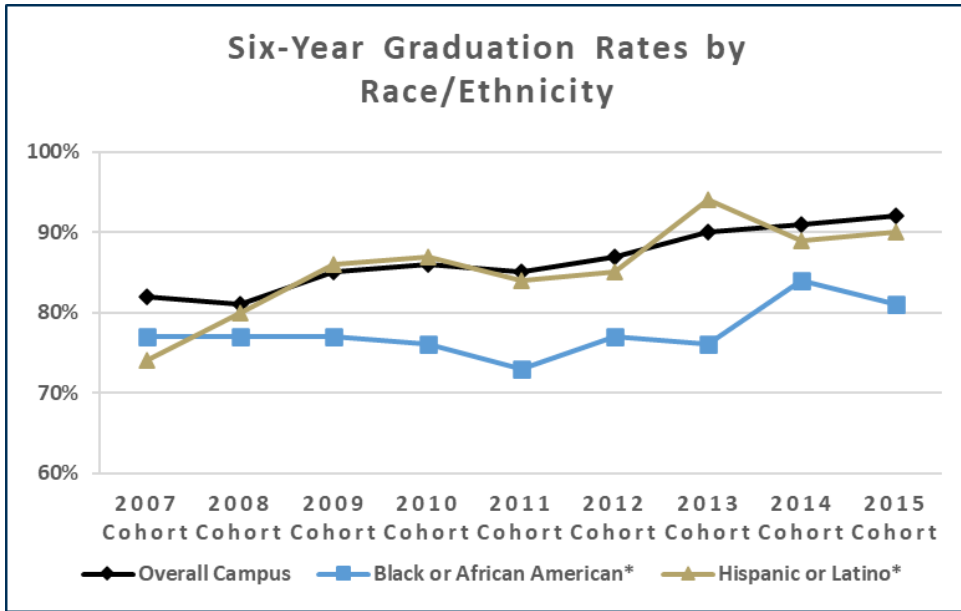
	2007 Cohort	2008 Cohort	2009 Cohort	2010 Cohort	2011 Cohort	2012 Cohort	2013 Cohort	2014 Cohort	2015 Cohort
<b>URM</b>	76%	78%	80%	80%	79%	82%	85%	87%	86%
<b>Non-URM</b>	83%	82%	85%	87%	86%	88%	91%	91%	92%



**Six-Year Graduation Rates - Black or African American, Hispanic or Latino, Overall**

	2007 Cohort	2008 Cohort	2009 Cohort	2010 Cohort	2011 Cohort	2012 Cohort	2013 Cohort	2014 Cohort	2015 Cohort
<b>Overall Campus</b>	82%	81%	85%	86%	85%	87%	90%	91%	92%
<b>Black or African American*</b>	77%	77%	77%	76%	73%	77%	76%	84%	81%
<b>Hispanic or Latino*</b>	74%	80%	86%	87%	84%	85%	94%	89%	90%

\* Includes only U.S. Citizens and permanent residents



**Appendix H – Six-Year Graduation Rates for Students in High-Impact Curricular and Co-Curricular Programs**

**High-Impact Practices, Six-Year Graduation Rates**

<b>Academic Enrichment Program</b>	<b>Fall 2012 Cohort</b>	<b>Fall 2013 Cohort</b>	<b>Fall 2014 Cohort</b>
<b>CO-OP</b>	96%	97%	98%
<b>GT 1000</b>	88%	89%	92%
<b>Grand Challenges, Living Learning Community</b>	90%	94%	86%
<b>Honors Program, Living Learning Community</b>	92%	93%	94%
<b>Internship</b>	97%	96%	97%
<b>Study Abroad</b>	98%	97%	98%
<b>Undergraduate Research Opportunities Program (UROP)</b>	95%	96%	97%
<b>Vertically Integrated Projects (VIP) Program</b>	93%	94%	98%

**Appendix I—Challenge and AAMI Outcomes****Fall 2021 GPA Outcomes for Summer 2021 URM Challenge Participants**

Challenge First-Year Black (64)	3.15	Non-Challenge First-Year Black (232)	3.01
Challenge First-Year Hispanic (25)	3.24	Non-Challenge First-Year Hispanic (250)	3.26
Challenge First-Year Multi (4)	3.22	Non-Challenge First-Year Multi (100)	3.28
Challenge Fall GPA Average (104*)	3.19	Non-Challenge Fall GPA Average (583)	3.16
% Challenge students with GPA = 4.0 (13)	12%		
% Challenge students with GPA ≥ 3.0 (72)	69%		

\*Summer 2021 Challenge included 105 participants with 104 enrolled during Fall 2021

**Average Cumulative GPA for First-Year Students at the End of Fall Term**

Cohort	AAMI Participants	Non-AAMI Matched Peers	Non-Black Males
2021	3.19	3.13	3.32
2020	3.18	3.04	3.50
2019	3.14	2.89	3.40
2018	3.10	2.78	3.34
2017	3.25	2.93	3.46
2016	3.09	2.85	3.37
2015	3.24	2.95	3.47
2014	3.43	3.04	3.40
2013	3.36	2.77	3.32

**Undergraduate First-to-Second-Year Retention Rates**

Cohort	Institutional	AAMI Participants	Non-AAMI Matched Peers
2021	97%	99%	93%
2020	97%	100%	94%
2019	97%	96%	93%
2018	97%	94%	89%
2017	97%	95%	90%
2016	97%	96%	93%
2015	97%	100%	95%
2014	97%	94%	97%
2013	96%	97%	91%

**Appendix J – Not-Registered Survey Population Sizes and Survey Response Rates**

Survey Administration Date	July 2022	July 2021	July 2020	July 2019	July 2018	August 2017	July 2016	June 2015	June 2014
Survey Population Size*	740	541	590	866	579	642	643	538	632
Number of Respondents	185	245	238	393	317	316	308	268	268
Response Rate	25% (185/740)	45% (245/541)	40% (238/590)	45% (393/866)	55% (317/579)	49% (316/642)	48% (308/643)	50% (268/538)	42% (268/632)

*\*Not registered for fall classes by the end of Phase I (early) registration*

**Appendix K – PLUS Outcomes by Course**

<b>Summer 2021</b>				
<b>Class</b>	<b>Number PLUS Regulars* that earned A,B,C,S</b>	<b>% of PLUS Regulars* that earned A,B,C,S</b>	<b>Number Non-PLUS Students Earning A,B,C,S</b>	<b>% of Non-PLUS Students Earning A,B,C,S</b>
CHEM 1310	1	100.00%	44	88.00%
MATH 1550	0	0.00%	27	87.10%
MATH 1553	5	100.00%	160	95.81%
PHYS 2211	11	100.00%	194	91.94%
PHYS 2212	5	100.00%	235	92.16%
<b>Total</b>	<b>22</b>	<b>100.00%</b>	<b>660</b>	<b>92.44%</b>

\* PLUS Regulars = 5 or more visits per semester; Non-PLUS = 0 visits during the semester

<b>Fall 2021</b>				
<b>Class</b>	<b>Number PLUS Regulars* that earned A,B,C,S</b>	<b>% of PLUS Regulars* that earned A,B,C,S</b>	<b>Number Non-PLUS Students Earning A,B,C,S</b>	<b>% of Non-PLUS Students Earning A,B,C,S</b>
CHBE 2100	12	100.00%	42	84.00%
CHEM 1211K	36	97.30%	249	88.61%
CHEM 1212K	2	100.00%	198	89.59%
CHEM 1310	8	100.00%	401	95.25%
CHEM 1315	23	100.00%	73	91.25%
CHEM 2311	23	100.00%	235	91.80%
CHEM 2312	6	100.00%	105	84.68%
CS 1331	12	100.00%	589	89.79%
CS 1332	16	100.00%	482	84.27%
ECON 2105	2	100.00%	232	97.48%
ECON 2106	2	100.00%	405	92.89%
ISYE 2027	7	87.50%	87	85.29%
MATH 1551	27	100.00%	414	84.49%
MATH 1552	11	91.67%	376	79.66%
MATH 1553	54	98.18%	729	90.22%
MATH 1554	33	94.29%	1148	87.77%
MATH 2106	0	0.00%	63	94.03%

<b>Fall 2021</b>				
<b>Class</b>	<b>Number PLUS Regulars* that earned A,B,C,S</b>	<b>% of PLUS Regulars* that earned A,B,C,S</b>	<b>Number Non-PLUS Students Earning A,B,C,S</b>	<b>% of Non-PLUS Students Earning A,B,C,S</b>
MATH 2550	7	100.00%	222	84.73%
MATH 2551	15	93.75%	432	85.21%
MATH 2552	20	90.91%	568	91.17%
PHYS 2211	10	90.91%	676	88.60%
PHYS 2212	39	92.86%	425	78.70%
<b>Total</b>	<b>365</b>	<b>96.56%</b>	<b>8151</b>	<b>87.86%</b>

\* PLUS Regulars = 5 or more visits per semester; Non-PLUS = 0 visits during the semester

<b>Spring 2022</b>				
<b>Class</b>	<b>Number PLUS Regulars* that earned A,B,C,S</b>	<b>% of PLUS Regulars* that earned A,B,C,S</b>	<b>Number Non-PLUS Students Earning A,B,C,S</b>	<b>% of Non-PLUS Students Earning A,B,C,S</b>
AE 3140	13	92.86%	76	85.39%
CHEM 1211K	3	75.00%	73	80.22%
CHEM 1212K	3	100.00%	372	93.23%
CHEM 1310	2	100.00%	158	92.40%
CHEM 1315	12	100.00%	64	80.00%
CHEM 2311	15	100.00%	104	94.55%
CHEM 2312	16	94.12%	258	86.58%
CS 1331	20	90.91%	621	83.92%
CS 1332	24	100.00%	446	85.11%
ISYE 2027	7	100.00%	63	82.89%
MATH 1113	3	75.00%	21	40.38%
MATH 1551	7	87.50%	102	82.26%
MATH 1552	9	100.00%	628	87.22%
MATH 1553	43	97.73%	299	80.38%
MATH 1554	15	83.33%	245	67.31%
MATH 2106	0	0.00%	50	92.59%
MATH 2550	11	100.00%	230	82.73%

<b>Spring 2022</b>				
<b>Class</b>	<b>Number PLUS Regulars* that earned A,B,C,S</b>	<b>% of PLUS Regulars* that earned A,B,C,S</b>	<b>Number Non-PLUS Students Earning A,B,C,S</b>	<b>% of Non-PLUS Students Earning A,B,C,S</b>
MATH 2551	13	92.86%	1150	93.27%
MATH 2552	21	100.00%	574	94.88%
PHYS 2211	27	87.10%	709	88.63%
PHYS 2212	24	96.00%	497	85.69%
<b>Total</b>	<b>288</b>	<b>94.12%</b>	<b>6740</b>	<b>86.86%</b>

\* PLUS Regulars = 5 or more visits per semester; Non-PLUS = 0 visits during the semester



## ***Appendix L – GT-AMP grant Executive Summaries and Year One Updates***

*Initiatives to advance one or more University System of Georgia Momentum Approach goals aligned with one or more goals of the Amplify Impact focus area of the Institute Strategic Plan.*

See also: GT-AMP RFP: <https://completecollege.gatech.edu/gt-amp/>

GT-AMP Project Reports: <https://completecollege.gatech.edu/2021-22-gt-amp-projects/>

### **Executive Summaries (January 2022)** **Momentum Goals & Amplify Impact Goals**

#### **Year 1 Outcomes (July 2022)** **Outcomes of Synthesized Goals**

#### **Project 1: Enhancing Student Self-Awareness, Resilience, and Engagement through Strengths-Based Learning**

Mary Lynn Realff, *Associate Professor and Associate Chair for Undergraduate Program, School of Materials Science and Engineering*

Lacy Hodges, *Director, Undergraduate Analytics and Planning and Senior Academic Professional, Office of Undergraduate Education*

Christie Stewart, *Senior Academic Professional, School of Biological Sciences*

#### **Executive Summary**

This GT-AMP grant expands student engagement through integration and expansion of Strengths-based practices in two AACU High Impact Practice areas: undergraduate research and the first-year seminar. Additionally, it will expand the APFH 1060: *Flourishing: Strategies for Well-Being and Resilience* course that we developed to enable more students to focus on these aspects of health and well-being and benefit from the course. It builds on the Effective Team Dynamics Initiative (ETD), which has taught Tech students how to identify and apply their strengths, how to build resilience and thrive, and how to make purposeful choices in their pathways through Tech.

Our grant focuses on three key areas of the Momentum Approach Goals: 1) heightening academic engagement and momentum through high-impact practices; 2) creating and cultivating productive academic mindsets through promoting well-being; and 3) supporting students in making purposeful academic and career choices. Our approach to these goals is aligned with the GT's Amplify Impact Moving into Action strategies, including: 1) ensure that all students are prepared for career success and impact; 2) infuse STEM disciplines with arts, humanities, and social sciences; and 3) strengthen the curriculum in areas that support the U.N. Sustainable Development Goals and specifically, "healthy lives and well-being."

#### **Year 1 Outcomes**

The Enhancing Student Self-Awareness, Resilience, and Engagement through Strengths-Based Learning project has progressed successfully over the first six months, and we have met our six-month goals outlined in our project plan for two of the three focus areas (first-year seminar and wellness course). We have developed two Strengths-Based activities for GT 1000: First-Year Seminar and GT 2000: Transfer Student Seminar courses and have trained course instructors on these activities. Both activities leverage Strengths to allow students to reflect on purposeful academic choices and growth mindset strategies and provide actionable tools for them to use when facing academic challenges. We plan to implement these assignments in the curriculum for Fall 2022 and will also assess their efficacy through questions incorporated in the end-of-the-semester seminar for the first-year and transfer student seminars. For the third area, we shifted focus to test our training materials before

expansion of the research scholars program. We expect that we will meet of the goals that we outlined in the proposal during the last 12 months of the grant.

### **Project 2: Developing a New Multi-Disciplinary Major in the Environmental Sciences**

Jean Lynch-Stieglitz, *Associate Chair and Professor, School of Earth and Atmospheric Sciences*

Jennifer Kraft Leavey, *Assistant Dean, College of Sciences and Principal Academic Professional, School of Biological Sciences*

#### ***Executive Summary***

This project will support the development of a new College of Sciences interdisciplinary degree program in Environmental Science. Environmental Science draws on the biological, chemical, and physical sciences to better understand the Earth's environment and human impacts upon it. This program will produce scientists empowered to address global challenges. The major will be designed to allow students from a diversity of academic backgrounds to thrive through a broad course of study including both natural and social sciences. It will support the USG Momentum Approach goals by providing a clear and flexible curricular framework that will encourage engagement and on-time degree completion for all students, including transfer students and those changing majors after arriving at Georgia Tech. Understanding the interactions between humans and the natural systems that support them is a key underpinning of education for sustainable development (ESD) and is an inherently transdisciplinary endeavor. The major will support the Amplify Impact focus area of Georgia Tech's strategic plan by strengthening the curriculum in areas that support the U.N. Sustainable Development Goals (SDGs) and by creating a new multidisciplinary curricular pathway.

#### ***Year 1 Outcomes***

Faculty from the Schools of Earth and Environmental Sciences and Biological Sciences have collaborated to develop and refine an interdisciplinary undergraduate Environmental Science degree program in the College of Sciences. The new program encompasses a broad course of study in both the natural and social sciences. This program supports the Amplify Impact focus area of Georgia Tech's strategic plan through creating a new multidisciplinary curricular pathway and supporting the U.N. Sustainable Development Goals (SDGs). The newly proposed Environmental Science degree program also supports USG Momentum Year goals by providing both academic engagement opportunities and a flexible curriculum that will help students to maintain full momentum along a clear pathway. The program has been presented to the University System of Georgia and is now under review to be considered for approval.

### **Project 3: *Science and Society* Internship Program**

Christopher M. Stanzione, *Senior Lecturer, Associate Chair of Undergraduate Studies, School of Psychology*

#### ***Executive Summary***

The School of Psychology is creating a *Science and Society* Internship program. The program includes three tracks: 1) International Experience, 2) Virtual Experience, and 3) Local Impact, with the goal to help support students achieve full momentum towards graduation and their post-graduate career, improve academic engagement, and deepen purposeful choices for their careers in a global world. Secondly, our program helps to serve Georgia Tech's strategic vision as we mobilize our partnerships for moving into action. These internships will offer students practical experience to ensure they are prepared for career success and offer the School of Psychology an opportunity to develop educational programs that will meet emerging market needs. We've also designed a mentoring experience within the Internship program between graduate and undergraduate students, which we believe will offer unique applied and academic views during the experience. We've designed the program in a way to meet the needs and strengthen the undergraduate experience, increase our network of companies and partners, and improve the visibility of our program.

### **Year 1 Outcomes**

The *Science & Society* Internship program has made great progress since receiving GT-AMP funding: (1) One of the goals of our program is to help students make degree progress while also gaining real-world experience while on internship. As of today, a new course has been submitted and approved by the GT IUCC: [PSYC 2695/4695 INTERNSHIP](#). This course allows students to enroll in 1, 2 or 3 credit hours of free electives towards their degree while working on the internship site. The course is overseen by Dr. Christopher Stanzone, Associate Chair for Undergraduate Studies, which includes a syllabus and written deliverables throughout the term. (2) An internship handbook was created to describe the program in detail. (3) An online application portal was developed to streamline applications. (4) New infrastructure is installed to enable hybrid/online internships. (5) Five undergraduate students have already completed their internships and 30 internship opportunities have been created for the next two semesters. (6) As an expansion of the Science & Society Internship Program, 8 high-school students were hosted over the summer for research experience. With the goal of scaling the program, we are working closely with James Stringfellow, Career Educator for the College of Sciences, to meet benchmarks described in the original application.

### **Project 4: Integrating Growth Mindset to JumpStart our Georgia Tech Student-Athletes**

Christopher J. Breen, *Associate Athletic Director, Office of Student Services, Georgia Tech Athletic Association*

#### **Executive Summary**

The Georgia Tech Athletic Association is excited to have the opportunity to expand upon their growth mindset programming not only for their first-year transition program, Jumpstart Jackets, but at additional opportunities throughout the student-athletes journey at Tech. The goal of this expanded program would be to infuse this momentum/mindset into all practices within our day-to-day practices including but not limited to midterm advising, graduation planning, coach communication, coach education and developing everyday champions. This expanded program would “move into action” the need to “create and cultivate productive academic mindsets” to align with USG Momentum Summit goals. Equipping our student-athletes with a growth mindset instills in them the tenacity to face the Georgia Tech academic thrive culture head on. By infusing a growth mindset culture in our everyday processes, our staff will reinforce the concepts during each step of a student’s journey through Tech. As we commence from the last 18 months of the COVID-19 pandemic, Georgia Tech students need a growth mindset more than ever. This program is in direct response to the feedback from faculty and evaluation of our student-athletes' needs that have emerged as it relates to in-person, synchronous, and asynchronous courses. Students, especially student-athletes, have had to redefine their approach to academic success.

### **Year 1 Outcomes**

**With the opportunity provided by the GT-AMP grant funding, The Georgia Tech Athletic Association expanded its Jumpstart Jackets transition and acclimation programming for their first year and transfer student-athletes to include presentations on Growth Mindset facilitated by Samantha Gilmore, Mental Performance Coordinator for New York Mets. Based on feedback from Qualtrics surveys, student-athletes reported feeling “anxious, excited, nervous” prior to attending the session on Growth Mindset during Jumpstart Jackets. After completing the programming, student-athletes reported feeling “ready, eager, prepared”, which is direct result of the Jumpstart Jackets programming.**

**Additionally, our GTAA academic staff participated in two sessions of growth mindset training. The topics delivered included approaching the individual person first, motivating student-athletes to encourage commitment to education, working with fear of failure, motivational interviewing, and teaching skills to support mental performance.**

**Project 5: Library Interactive Media Cross-Disciplinary Workshop (6-month project, completed July 2022)**

Stuart Romm, AIA, LEED AP, *Professor of Practice, College of Design, School of Architecture*

**Executive Summary**

This Amplify Momentum Project (GT-AMP) is centered around a unique pilot program for creating new multidisciplinary curricular pathways for Georgia Tech students and researchers. This first iteration, a spring 2022 workshop course across multiple schools in the College of Design will be a collaborative opportunity for Architecture, HCI, ID, Digital Media, Music Technology, & CS students to research, conceptualize, and rapid-prototype implementable designs for impacting their own campus. The sites of exploration are 2 pioneering interactive media environments at truly beacon locations in the renewed GT Library: its Media Bridge and Interactive Zone. This initiative will begin the transformation of this historic campus crossroad into a real-world laboratory for re-inventing the future of public space through creative digital engagement and interactivity.

This unique course experience for hands-on learning affords students a rare and much sought-after opportunity to help build their own world in a mode of community service. It is conceived within a larger framework of recent cross-disciplinary workshop courses initiated in the College of Design, such as the 2019 Digital Fabrication Lab Workshop led by Professor of the Practice, Stuart Romm. That workshop resulted in the recently completed Library Bridge seating being prototyped, fabricated, and installed by the design students themselves.

**Year 1 Outcomes**

The GT-AMP funded Interactive Media Workshop was a co-curricular Spring 2022 course intended to be a pilot opportunity for creating new multidisciplinary curricular pathways for Georgia Tech students and researchers. This first iteration, a workshop course across multiple schools in the College of Design was a collaborative opportunity for Architecture, Industrial Design, Digital Media, and Music Technology students to research, conceptualize, and rapid-prototype implementable designs for impacting their own campus. The site of exploration was the pioneering interactive media environment at the Georgia Tech Library Media Bridge. This workshop contributed to the transformation of this historic campus crossroad into a real-world laboratory for re-inventing the future of public space through creative digital engagement and interactivity.

This unique course experience for hands-on learning afforded students a much sought-after opportunity to help build their own world in a mode of community service. The four cross-disciplinary student teams researched emerging technologies to develop interactive media prototypes, which were demonstrated in a public presentation to the Deans of the Library and College of Design, as well as the current and former Georgia Tech Provosts. The successfully piloted projects offer unique possibilities of multisensory architectural environments that intersect both physical and virtual experiences into a new generation of public space.

**Project 6: Public Interest Technology (PIT) for First-Year Engineers**

Andy Frazee, *Director, Writing and Communication Program, School of Literature, Media, and Communication*

Ruthie Yow, *Senior Academic Professional and Service Learning and Partnerships Specialist, Center for Serve-Learn-Sustain, Office of Undergraduate Education*

**Executive Summary**

“Public Interest Technology (PIT) for First-Year Engineers,” a collaboration of Serve-Learn-Sustain and the Writing and Communication Program (WCP), connects first-year engineers to community-based experiential

learning themed around technology for the public good. The project will heighten academic engagement through the inclusion of service-learning experiences with community partners; help students make and deepen purposeful choices by exposing them to organizations and careers in public interest technology; and support students in maintaining momentum along a clear pathway through offering them opportunities to extend their PIT learning through other courses in their major that draw on PIT materials, case studies, and partnerships. The proposed initiative brings together four community partners, four Brittain Fellows in the WCP, and four College of Engineering (CoE) faculty members. These collaborators will collaboratively design two deliverables: a PIT- and service-learning-infused syllabus appropriate for all first-year students, but of particular interest to CoE students and a suite of course modules with specific disciplinary emphases to be used in major-specific sections of ENGL 1101 and ENGL 1102. This project more broadly advances the incorporation of community engagement into the College of Engineering curriculum and the equipping of engineering students to be change agents at Georgia Tech and in their lives after graduation.

### **Year 1 Outcomes**

During Year 1, the “Public Interest Technology for First Year Engineers” program selected four Brittain Fellows for the project, met biweekly during Spring 2022, convened engineering faculty and partners in a co-creation session focused on identifying themes for pilot sections, finalized syllabi for those courses, and piloted four community-partnered sections of ENGL 1102. During Summer 2022, the project team met weekly to discuss key takeaways and begin to envision how the compressed format of the summer term would be extended into the conventional 12-week format for Fall 2022, when Brittain Fellows will continue to work with their community partners and their public-interest-technology-themed sections will be restricted to engineering majors.

### **Project 7: Accessible Construction Education through Virtual/Augmented Reality Discipline Explorations (ACE-VADER)**

Ece Erdogmus, *Professor and Chair, Undergraduate Director, School of Building Construction*

Pardis Pishdad-Bozorgi, *Associate Professor and Graduate Program Director, School of Building Construction*

Javier Irizarry, *Professor and Associate Dean of Academics, School of Building Construction*

Maureen Linden, *Senior Research Engineer, Center for Inclusive Design and Innovation*

Zerrin Ondin, *Research Scientist II, Center for Inclusive Design and Innovation*

Ben Kreimer, *Creative Technologist*

### **Executive Summary**

This Amplify Momentum Project leverages the latest technologies utilized in the construction field and construction education, including Augmented and Virtual Reality, Building Information Modeling (BIM), and drone-based visual inspections; to create experiential teaching modules for students of all abilities at a pre-college summer camp. The ACE-VADER modules will use device-agnostic, accessible, and experiential activities to help students visualize themselves as future construction professionals. The modules will be designed with utmost care to help all students, including those with disabilities, to consider construction as a viable choice of major and/or to deepen their interest in this field through experiential learning opportunities. Similarly, the off-site augmented and virtual reality-enhanced activities will present virtual Construction Management or Building Information Modeling Management (BIM-M) as exciting career paths for students who may have not previously considered these professions.

The ACE-VADER modules, and pre-college camp curriculum developed from this project, will strengthen Georgia Tech’s efforts to recruit students for the recently revitalized Bachelor of Science in Building Construction degree program (BSBC). This project’s initiatives target the following Momentum Approach goal: “Make and deepen purposeful choices,

regarding choice of major or career path, or regarding choice of experiential learning opportunities.” Furthermore, it addresses the following areas of the Georgia Tech Strategic Plan: Amplify Impact and Expand Access.

### ***Year 1 Outcomes***

A curriculum for a pre-college summer camp was developed and offered for the first time to fifteen students in June 2023. The camp curriculum included: 1) Building Information Modeling (BIM)-enabled pre-construction processes; 2) hands-on construction and quality-control using AR and infrared technologies; 3) practice with emerging technologies in construction; and 4) industry interactions. The campers designed a wall in REVIT and utilized 4D simulation to create a schedule and cost estimate for its construction. Then, the students built the walls and compared the as-built structure with their models using Augmented Reality technology. In the third module, the students experienced various emerging technologies, such as a construction robot dog, drones and mini drones, laser scanning, and 3D printing. Industry guest speakers, an office visit, two actual construction sites, and a virtual site visit using Virtual Reality provided opportunities to understand the daily operations of this career. The virtual site visit was pre-recorded by the research team using a 360 camera. Pre- and post-surveys were conducted. During the final presentations and on the surveys, the students reflected on what a professional career in construction really entails and indicated that they are more excited about this career choice than they were before the visit.

### ***Appendix M—Equity in Retention Academy Outcomes***

Georgia Tech’s standard success metrics (e.g., six-year graduation rates for first-year cohorts, one-year retention rates for first-year cohorts) are strong. However, certain demographics (e.g., underrepresented minorities, first-generation students, Pell students) within the cohorts underperform the baselines. For some metrics, like our four-year graduation rates, the disparity across demographics is more pronounced. Further, transfer students are a growing population of undergraduates with increased diversity. Appraising their success is increasingly important.

Based on Georgia Tech’s success metrics, we are working to identify institutional resources and barriers to retention and 4-year graduation; to draft recommendations that use an equity lens in developing processes for retention, persistence, performance, and graduation; and to implement a plan of action based on these recommendations. As part of this work, key stakeholders who are influential in said process development participated in the Gardener Institute Equity in Retention Academy (EiRA). EiRA is a structured, 5-week academy that prepares institutional teams to conduct an evidence-based, equity-focused student retention planning process for their institution with a goal of improving retention and using evidence to ensure that race, ethnicity, and family income are no longer the best predictors of retention and student success.

As part of our work in the EiRA, we identified multiple resources and ongoing efforts to help improve student retention and performance, including (1) providing midterm progress reports for all 1000- and 2000-level classes; (2) contacting students who are not registered for fall semester by the end of phase I registration; (3) contacting students who are in academic distress, on academic probation, or are in danger of academic dismissal; (4) providing academic advising for students within each unit; (5) offering academic and co-curricular programs for underrepresented minorities, first generation, and low-resource students; and (6) directing students to relevant campus resources that serve their demographic. However, in addition to these resources and efforts, we also identified barriers to retention that are also connected to increased time to degree completion, including (1) curricular complexity, which requires a lengthy chain of courses that must be taken sequentially; (2) foundational courses in Math, Physics, and Computer Science with higher drop/withdraw/fail (DWF) rates for underrepresented minority students; and (3) lacking calculus readiness, which can increase time-to-graduation by as much as two semesters.

Based on the resources and barriers identified, we are working to implement the following recommendations:

1. Increase the capacity for advising within the units. By increasing advising capacity, we can require academic advising and resource discussions for students who receive a U on midterm progress reports. We can also embed academic advising for degree progression into required classes in order to eliminate the need for students to seek out advising.
2. Develop language in our correspondence that communicates an expectation of success and partnership with students who are struggling academically.
3. Identify and cultivate relationships with faculty champions within the units. These champions can identify courses with high curricular complexity and work to reduce that complexity in a sustainable manner. Furthermore, they can identify classes that have higher DWF rates for our target students and make systemic changes in those classes.
4. Increase faculty and staff resources for pre-calculus students. The purpose of these resources is to reduce curricular complexity for students who lack calculus readiness and start the Institute in Math 1113.
5. Increase our target students’ participation in high impact learning practices because this participation increases both academic performance and the sense of belonging at the Institute.

***Appendix N – CCG-GT Steering Committee Members, 2021-22***

- Dr. Sybrina Atwaters, Director, Office of Minority Education & Development
- Mr. Elijah Cameron, Director, Office of Assessment and Quantitative Services, College of Computing
- Dr. Al Ferri, Professor and Associate Chair for Undergraduate Studies, School of Mechanical Engineering
- Dr. Steven P. Girardot, Vice Provost for Undergraduate Education\*
- Dr. Linda Green, Director, Tutoring and Academic Support
- Dr. Joyelle Harris, Director, DEI Initiatives in Undergraduate Education
- Dr. Lacy Hodges, Director, Undergraduate Analytics and Planning
- Ms. Sandra Kinney, Senior Director, Institutional Research and Planning
- Dr. Paul Kohn, Vice Provost for Enrollment Management
- Dr. Beth Spencer, Director, Undergraduate Advising and Transition
- Dr. Charmaine Troy, Associate Director, First-Generation Student Initiatives
- Dr. Cam Tyson, Assistant Dean for Academic Programs, College of Sciences
- Dr. De Morris Walker, Director, Summer Session Initiatives
- Dr. Joyce Weinsheimer, Director, Center for Teaching and Learning
- Mr. Craig Womack, Associate Dean/Sr. Director of Undergraduate Programs, Scheller College of Business
- Dr. Brenda “B” Woods, Director of Research and Assessment, Student Engagement & Well-Being

*\*Chair, CCG-GT Steering Committee*