
ANNUAL IMPACT REPORT OF
THE QUALITY ENHANCEMENT PLAN ON STUDENT LEARNING

**“STRENGTHENING THE GLOBAL COMPETENCE AND
RESEARCH EXPERIENCES OF UNDERGRADUATE STUDENTS”**

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JULY 2008



On the WWW at: www.assessment.gatech/SACS/QEP



August 1, 2008

Dear Colleagues,

As we move into the latter phases of Georgia Tech's Quality Enhancement Plan, "Strengthening the Global Competence of and Research Experiences of Undergraduate Students," we have a great story to share. I am very pleased to report that we are realizing excellent progress toward our stated goals. I would also like to particularly acknowledge the leadership of many students, staff, and faculty colleagues and their commitment to assure our success. You will see their names throughout this report.

While this annual report summarizes our progress to date I believe you will find much of interest and value to you. We of course would welcome your thoughts and comments on our progress, as well as your contributions to the success of our QEP.

Sincerely,

Jack R. Lohmann, Ph.D., P.E.
Vice Provost and Professor

GEORGIA TECH'S QUALITY ENHANCEMENT PLAN

“Strengthening the Global Competence and Research Experiences of Undergraduate Students” is the result of a two-year Institute-wide effort to improve on Georgia Tech’s philosophy of “learning by doing” in providing our graduates with a contemporary education and the lifelong learning skills needed for the future. Implemented in Fall 2005 the five-year Quality Enhancement Plan (QEP) involves all six colleges of Georgia Tech and a number of support units with Georgia Tech’s broad base of research programs and international efforts serving as important enablers. The plan includes two main initiatives.

The first initiative, referred to as the *International Plan (IP)*, seeks to increase the number of undergraduate students who graduate with global competence in the international practice of their major. Global competence is the product of both international studies and experiences designed to instill a deep and multi-faceted understanding of global relations, intercultural differences, and international disciplinary practices. This initiative involves a unique degree-long program that integrates international studies and experiences into any major at Georgia Tech. Graduates of the program will be proficient in a second language; be knowledgeable about comparative international relations, the world economy, and the socio-political systems and culture of at least one other country or world region; and be able to practice their discipline within an international context. Students completing the program will receive the degree designation “International Plan” on their transcripts and diplomas to signify the depth and breadth of their global competence in their major. Among the desired outcomes is to achieve Georgia Tech’s strategic goal of having 50 percent of its undergraduate students graduate with an international experience by 2010.

The second initiative seeks to increase the number of undergraduate students participating in research and encourage more students to pursue a research career. This effort is based on two programs known as the *Undergraduate Research Opportunities Program (UROP)* and the *Research Option*. The Undergraduate Research Opportunities Program seeks to facilitate the participation of more undergraduate students in research, encourage longer research experiences, and improve the quality of these experiences through faculty mentoring. The Research Option is designed for those students who seek an intensive research experience and possibly a research career. Participants in both programs will deepen and broaden their problem-solving and communication skills, knowledge of the frontiers of their discipline, and research competence and confidence. Students completing the Research Option will receive the recognition “Research Option” on their transcripts to signify the extra depth and breadth of their research experience. Among the desired outcomes is to have 60 percent of Georgia Tech’s undergraduate students graduate with research experience by 2010.

The management and implementation of the QEP involves the senior administration of Georgia Tech, college and unit leadership, and faculty and students organized into principally three committees. Each initiative is led by a committee of faculty, staff, and students; chaired by a member of the faculty; and co-chaired by a member of the provost’s office. These committees are responsible for implementing their respective initiatives. The leadership of these two committees forms a third committee to manage the QEP as a whole. All three committees work in close collaboration with participating academic and support units.

These initiatives are promising and timely areas in which to improve the quality of Georgia Tech’s educational experience to strengthen the opportunities for our undergraduate students to be well prepared to practice their disciplines in a global context and to strengthen the opportunities for them to enhance their skills in scholarship and innovation through research. The Georgia Tech QEP goals are challenging, attainable, and sustainable.

The Quality Enhancement Plan, a core requirement of the regional accreditation process, describes a focused course of action that addresses a well-defined issue or issues directly related to improving student learning. Development of the plan is outlined in the *Principles of Accreditation: Foundation for Quality Enhancement* published by the Commission on Colleges of the Southern Association of Colleges and Schools (COC/SACS). COC/SACS is the regional body for the accreditation of higher education institutions in the Southern states (Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia) and Latin America that award associate, baccalaureate, master’s, or doctoral degrees.

PRINCIPAL MILESTONES FOR THE GEORGIA TECH QUALITY ENHANCEMENT PLAN¹

- INCREASE THE NUMBER OF UNDERGRADUATE STUDENTS WHO GRADUATE WITH GLOBAL COMPETENCE IN THE INTERNATIONAL PRACTICE OF THEIR MAJOR.

- INCREASE THE NUMBER OF UNDERGRADUATE STUDENTS PARTICIPATING IN RESEARCH AND ENCOURAGE MORE STUDENTS TO PURSUE A RESEARCH CAREER

Fiscal Year	International Plan	UROP and Research Thesis Option
2006	<ul style="list-style-type: none"> 100 students enrolled in the International Plan. Governance structures in place. Curricula approved for initial participating units; additional units identified and engaged. Staffing complete; recruiting processes in place. New international courses developed and approved. 	<ul style="list-style-type: none"> 50 additional students enrolled in research via the UROP efforts; 10 students enrolled in the Research Thesis Option. Governance structures in place. Research Thesis Options approved for initial participating units; additional units identified and engaged. Staffing complete; recruiting processes in place. Web site to coordinate the program launched.
2007	<ul style="list-style-type: none"> 200 students enrolled in the International Plan. Principal international sites for study abroad, internships, and research opportunities engaged. Curriculum matching between Georgia Tech and international partners completed. Students planning international experiences in FY07 advised and placed. 	<ul style="list-style-type: none"> 100 additional students enrolled in research via the UROP efforts; 20 students enrolled in the Research Thesis Option. Fall research job fairs offered to introduce students to research opportunities. Spring research symposia display student research projects to the campus.
2008	<ul style="list-style-type: none"> 250 students enrolled in the International Plan. First cohort (from FY06) completes their international experiences. Midpoint progress report distributed to campus, including formative assessment of student learning outcomes. Academic units establish culminating courses needed for FY09. 	<ul style="list-style-type: none"> 150 additional students enrolled in research via the UROP efforts; 35 students enrolled in the Research Thesis Option. First graduates expected for the Research Thesis Option. Midpoint progress report distributed to campus, including formative assessment of student learning outcomes. \$1 million of the \$2.5 million endowment raised.
2009	<ul style="list-style-type: none"> 300 students enrolled in the International Plan. First cohort (from FY06) graduates. Summative assessment begins; graduating students complete surveys, tests, language proficiency test, and reflective essay. 	<ul style="list-style-type: none"> 225 additional students enrolled in research via the UROP efforts; 50 students enrolled in the Research Thesis Option. Participation in spring research symposia increased and quality improved. Summative assessment begins; graduating students complete surveys and reflective essay.
2010	<ul style="list-style-type: none"> 300 students enrolled in the International Plan. Second cohort completes the program. Second round of summative assessment. First round of alumni surveys. <i>Impact Report</i> submitted to SACS. 	<ul style="list-style-type: none"> 300 additional students enrolled in research via the UROP efforts; 70 students enrolled in the Research Thesis Option. Second round of summative assessment. First round of alumni surveys. \$2.5 million endowment raised. <i>Impact Report</i> submitted to SACS.
2011	<ul style="list-style-type: none"> Summative assessment of the initiative. 	<ul style="list-style-type: none"> Summative assessment of the initiative.

¹ “Strengthening the Global Competence and Research of Experiences of Undergraduate Students,” March 2005.

INTERNATIONAL PLAN

2007-2008 MILESTONES AND IMPACT

INTERNATIONAL PLAN (IP) MILESTONE 1: ENROLL 250 ADDITIONAL STUDENTS

Enrollment and Recruitment

Current enrollment in the International Plan equals 396 students, which constitutes an increase in AY 2007/2008 of 157 new acceptances but is short of the stated goal of 550 for this reporting year.² Out of a possible 32 undergraduate majors at Georgia Tech, 23 participate in the Plan.³ Though the IP committee accepted two new undergraduate academic majors in 2007/2008 (Industrial Design and Science Technology, and Culture) neither has been approved by the Institute Undergraduate Curriculum Committee at the time of this report.

The program is experienced growing pains in that policies continued to be clarified, program staffing changed, and the program continued to adapt to servicing a growing undergraduate population.

The program faced challenges of instability in FY08 that were carried over from FY07. This mainly affected IP recruitment and retention efforts as well as overall program administration. Key to this was the vacant staff position which directs general recruitment/retention efforts and provides overall administration. That position was vacant from April, 2006 to December, 2006. As a result, key pieces of program infrastructure (i.e., capstone courses, program policy, and courses intended to serve degree-auditing needs) were late in being developed and implemented during FY07. The staffing vacancy also delayed some of the IP recruitment and retention actions as there was not a dedicated resource to focus on strategies for growing the program and retaining the current constituency of participants (i.e., program promotion, information dissemination, advising, community building) in the upcoming year though leadership made every effort to maintain those strategies already designed to do so.

In response, the newly hired IP program coordinator wrote a new marketing plan in FY08 taking into account ways to improve recruitment and retention for FY09 and beyond. The primary goals include improving awareness of the IP both on- and off-campus, retaining student participation and interest, and maintaining program support in the participating academic units.

The IP program office will work with participating academic units to complete the following actions:

- a. Develop more effective and consistent means of information dissemination including, but not limited to, revamping the IP website and marketing materials so that they convey a consistent message and one that is tied to the internationalization of the Georgia Tech education.
- b. Re-launch the IP with a week of information and focused events to culminate with a gala event inviting freshmen and sophomores to hear from Georgia Tech leadership and industry leaders on the importance and impact of having a globally-enhanced education.
- c. Develop and conduct an aggressive outreach by working more closely with the Georgia Tech Admissions Office on recruitment efforts.

² The number of new students accepted into the IP for 2006/2007 was reported erroneously in that year's report as 291. The actual number was 145 bringing the total of accepted students for the 2006/2007 year to 239.

³ The total number of participating academic majors for 2006/2007 was reported erroneously in that year's report as 24. The actual number was 23 for the 2006/2007 year.

We continued to send a personalized letter to all student applicants who have deposited their acceptance fee with Georgia Tech and therefore are most likely to attend. Furthermore, we will continue to set-up an information booth during Familiarization and Adaptation of Surrounding Environs of Tech (FASET) sessions and at other campus informational events. Of those accepted into the IP program in FY08, 38 percent applied during FASET--61 students out of a total of 157 for the year were accepted during the months of July and August 2007.

Academic units play a key role in attracting new students to and retaining them in the IP. Each participating unit designates faculty to advise prospective and current students as well as to promote the IP during FASET. Furthermore, the faculty follow-up on prospective leads provided to their departments by the School of Modern Languages whose staff collects statistics on IP interest from students enrolled in language courses.

Charts showing goal attainment, enrollment by college, and enrollment by chosen major are provided here and the following page.

Table 1: Undergraduate students enrolled in the International Plan by academic year

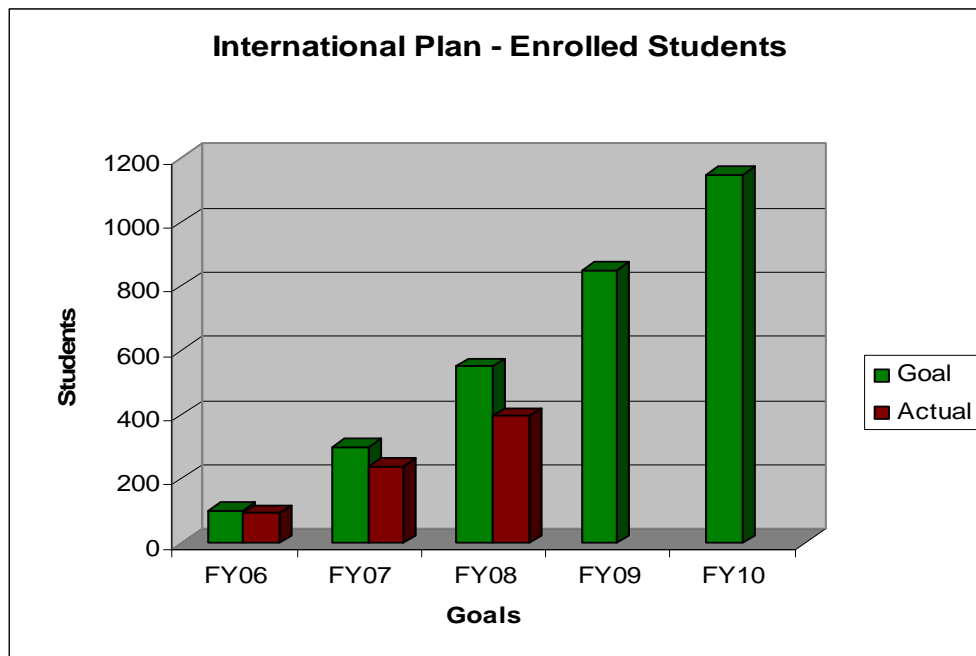


Table 2: Students enrolled in the International Plan by college

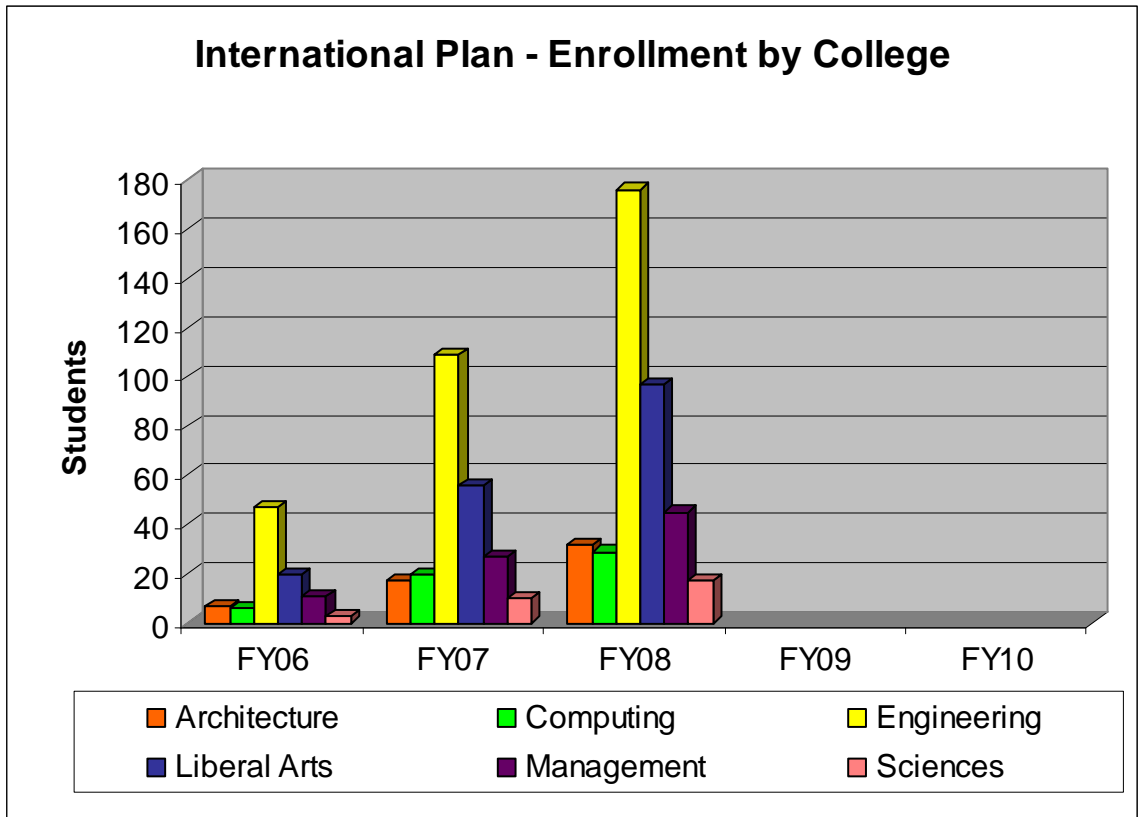
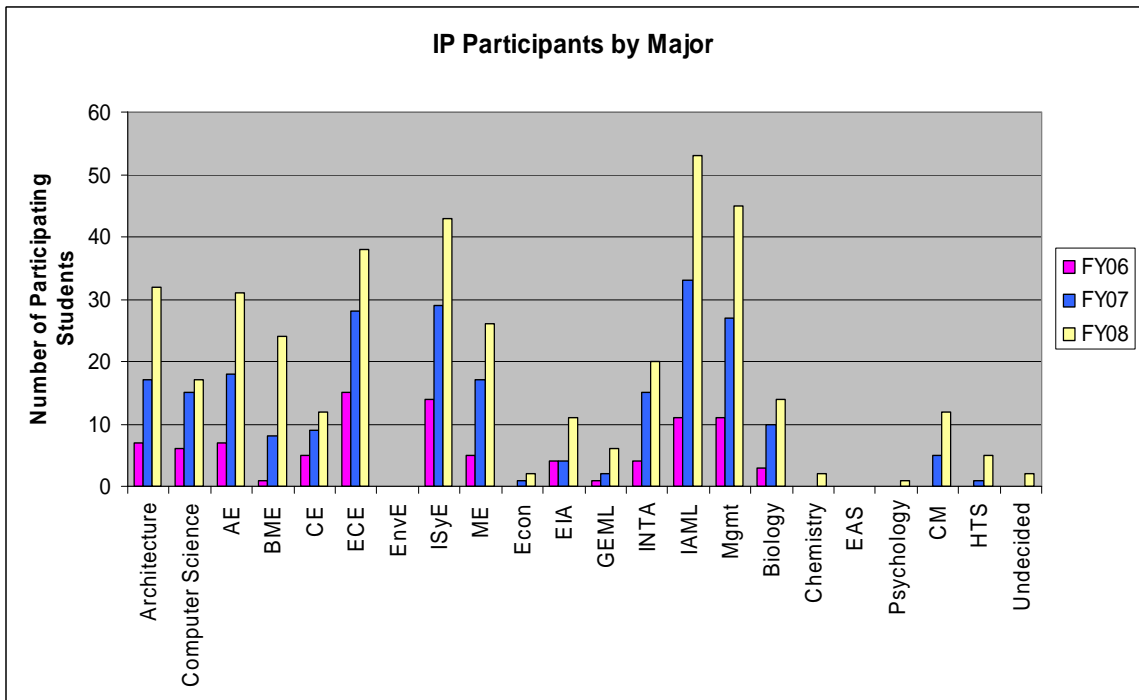


Table 3: Enrolled undergraduates students by chosen academic major



Participating Majors

The International Plan is currently available to undergraduate students in 23 participating academic majors.

Aerospace Engineering (AE)	Economics and International Affairs (EIA)
Architecture (ARCH)	Electrical Engineering (EE)
Biochemistry (BCHM)	Environmental Engineering (ENVE)
Biology (BIO)	Global Economics and Modern Languages (GEML)
Biomedical Engineering (BME)	History, Technology, and Society (HTS)
Chemistry (CHEM)	Industrial and Systems Engineering (ISyE)
Civil Engineering (CE)	International Affairs (INTA)
Computational Media (CM)	International Affairs and Modern Languages (IAML)
Computer Engineering	Management (MGT)
Computer Science (CS)	Mechanical Engineering (ME)
Earth and Atmospheric Sciences (EAS)	Psychology (PYSCH)
Economics (ECON)	

The following academic majors are scheduled to join the International Plan in 2008:

- Industrial Design
- Science, Technology, and Culture

Retention

Keys to retention in the IP are establishing a solid IP community, disseminating information efficiently and consistently, and assisting students in completing IP requirements (curriculum integration).

In order to encourage participating students to feel part of a unique community, the IP office instituted an annual lecture series, a newsletter, and the IP Facebook (Web) group in FY08. All IP students, faculty, and staff associated with the program received the monthly newsletter and all may also sign up for the on-line IP Facebook group. Currently, there are 271 Facebook group members of which 260 are students (257 current IP students and three IP alumnae) and 15 are academic advisors. The lecture series was publicized on several campus calendars sites and also as an open invitation to the campus community.

In partial service of facilitating the IP language requirement, the School of Modern Languages conducts language proficiency courses. The statistical data below shows the continued growth in enrollments by IP students in Modern Language classes. To date, no IP student has been turned away based on course availability. During the first three years of the IP, 539 new students enrolled in a modern language class which was well ahead of the projected target of 450 students set by the original IP plan for Year Three. IP students accounted for 354 of those students or 65.7 percent.

Table 4: By language, enrollment of undergraduate students in Modern Languages language courses. ⁴

Language	2001-2002	2002-2003	2003-2004	2004-2005	2004-2005	2005-2006	2006-2007	2007-2008	IP Students FY08	Total Increase in Numbers since IP	Total Change 2001-2008
Arabic	0	0	64	65	57	70	95	118	5	61	84.4%
Chinese	190	255	317	386	433	491	533	542	41	109	185.3%
French	597	671	813	903	881	980	930	983	92	102	64.6%
German	381	512	531	517	574	634	585	654	39	80	71.7%
Japanese	274	350	517	567	573	662	645	647	41	74	136.1%
Korean	0	0	73	101	74	61	100	137	3	63	87.7
Russian	96	130	162	138	143	178	129	156	3	13	62.5%
Spanish	676	909	1111	1236	1306	1265	1452	1343	130	37	98.7%
Linguistics	49	72	126	132	32	32	57	26	[Italian: 3]	-	-
TOTALS:	2263	2899	3714	4045	4073	4373	4526	4606	354 [of 396]	539	104%

⁴ Green numbers indicate enrollment spike since implementation of the International Plan in Fall 2005.

Table 5: Overall participation in the International Plan by language and academic major in FY07 and FY08. (FY07 is shown for comparative purpose.)

Language	FY07	FY08	Top Participating Units (at least 20)	FY07	FY08
Arabic	0	5	IAML	35	53
Chinese	3	41	ECE + EE	29	27
French	62	92	AE	20	31
German	24	39	MGT	25	45
Japanese	12	41	CS	22	16
Russian	1	3	ISYE	32	40
Spanish	143	130	ARCH	20	32
Italian		3	ME	22	26
			BME	0	24
			INTA	0	20
Totals	269	354	[Plus all others]	269	396

Enrollment in Chinese, French, and Japanese language courses has seen spectacular growth, and German and Spanish have remained strong. Indications from students show a desire to have available more programs in China, Japan, and France as well as in Spanish-speaking countries. The available German programs are sufficient for the current demand.

In response, the School of Modern Languages completed the following hires (shown by language). These are in addition to the existing four instructors funded by the IP.

- a. **Arabic:** One tenure-track faculty (August 2008) and one full-time instructor.
- b. **Chinese:** One tenure-track faculty (August 2008) to replace departed faculty member and one instructor for on-line Chinese coursework.
- c. **French:** One tenure-track faculty (August 2007) to replace departed faculty member.
- d. **Korean:** One full-time instructor (August 2008).
- e. **Japanese:** One instructor for on-line Japanese.
- f. **Spanish:** One new tenure-track faculty (August 2008).

In addition, more part-time instructors are on staff than what is funded by the IP. For example, six part-time instructors were funded in FY08 by the IP. The School of Modern Languages (ML) also hired other instructors primarily on the basis of external grant funding obtained by ML to help develop opportunities abroad. These ML efforts helped to create opportunities for IP students outside of the IP budget. Furthermore, Modern Languages continues to initiate international opportunities (see in Milestone 2, International Study and Work Abroad Opportunities for IP Students).

The Oral Proficiency Interview (OPI) testing results on the following page show a significant spike in completions in 2008 as expected. So far only one student has failed to meet the minimum requirements, and the majority of students have exceeded it.

Table 6: FINAL RATINGS REPORT (N=14)

Language	Rating	Number Completed
GERMAN	AL	2
GERMAN	AM	1
FRENCH	AL	1
FRENCH	IH	1
FRENCH	IM	1
MANDARIN	AM	1
MANDARIN	S	1
SPANISH	AL	3
SPANISH	AM	1
SPANISH	IH	2

XX = No Show
NL = Novice-Low
NM = Novice-Mid
NH = Novice-High
IL = Intermediate-Low
IM = Intermediate-Mid
IH = Intermediate-High
AL = Advanced-Low
AM = Advanced-Mid
AH = Advanced-High
S = Superior

Lastly, 38 students have withdrawn from the IP. The primary reason stated by students was having “insufficient time to complete requirements.” Almost half (16) were advanced enough in their academic programs (having earned 44 credit hours, or more, at the time of acceptance in Fall 2006) thus making it difficult for them to accommodate the IP requirements and still graduate in what they considered to be a “reasonable” amount of time.

**IP MILESTONE 2:
HAVE FIRST COHORT (FROM FY 06) COMPLETE INTERNATIONAL EXPERIENCES**

Students may use a combination of study abroad, work abroad, or research abroad (under development) to fulfill their international experience requirement. Efforts to expand programming in these areas are not necessarily specific to the IP but they serve IP needs in that they are the primary resources IP participants may use to fulfill their international experience requirement. Therefore, a discussion on the progress of all three is pertinent to IP status reporting.

During this reporting year, a total of 119 IP students were enrolled in an international experience. In Study Abroad programs, 105 IP students participated: 59 in Summer 2007; 8 in Fall 2007 alone; 20 for Spring 2008; and 18 for the full 2007/2008 academic year. Fourteen IP students participated in Work Abroad programs in the 2007/2008 academic year.

This year the IP program staff collaborated with the Office of International Education’s Study Abroad Office and the Office of the Registrar to implement a foreign credit transfer database listing courses from partnering academic institutions to put in place standing transfer approval.

Students may take the internationally-oriented coursework at Georgia Tech or while abroad. Key to facilitating this process is providing a sufficient number and variety of courses to accommodate the scope of possible international experiences. To that end, the IP Committee approved the reallocation of funding to support the development of courses to meet this demand. As a result 14 Modern Language courses were added to the list of those already approved to fulfill IP core course requirements.

International Study and Work Opportunities for IP Students

With funding from the IP budget, Georgia Tech faculty and staff from Electrical Engineering and Chemical Engineering academic units were able to conduct site visits to potential or current partner institutions, including one visit to Korea Advanced Institute of Science and Technology (KAIST) in Seoul, South Korea. Faculty and staff of the Department of Professional Practice (DoPP) and School of Modern Languages were also funded by the IP to develop additional Work Abroad Program opportunities. Activities in the Study Abroad Program that will serve IP student needs include new and expanded partnership agreements such as the College of Management's agreement with Rikkyo University in Japan and one with Bocconi School of Management in Italy. Discussions in progress include the following actions:

- a. Expansion of the agreements:
 - 1) between the Walter S. Coulter Department of Biomedical Engineering with the Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico, and,
 - 2) with Hong Kong Polytechnic University to include the College of Engineering (currently only with the College of Architecture).
- b. Development of agreements:
 - 1) with University College Dublin, Ireland's largest university;
 - 2) with Bogazici University in Istanbul, Turkey;
 - 3) for The Sam Nunn School of International Affairs and University of Konstanz in Germany;
 - 4) for the Ivan Allen College of Liberal Arts with Ritsumeikan Asia Pacific University in Japan;
 - 5) for the School of Modern Languages with the Academy of National Economics in Russia for an intensive language program offering and exchange partnership; and,
 - 6) for The Daniel Guggenheim School of Aerospace Engineering with École Nationale Supérieure de l'Aéronautique et de l'Espace (SUPAERO) in France. SUPAERO is the leading graduate university in aerospace engineering in France and in Europe.

New faculty-led Study Abroad Program opportunities included the following program areas:

- a. Biomedical Engineering in Switzerland included a faculty-led study abroad component followed by an internship.
- b. Building Construction in Paris, France.
- c. Chemical and Biomolecular Engineering in London, England.
- d. The Valencia Summer Program which did not operate in 2007 returned as faculty-led study abroad opportunity this year.

One hundred and eleven Georgia Tech undergraduate students worked abroad in 24 countries (increased from 46 students last year working in 21 countries). Almost 25% of the undergraduate students who worked abroad were enrolled in the IP. GT sent 30 students to Germany (the top country our students travel to) and 12 to Ireland primarily due to our collaboration with GT Ireland. Two of the Work Abroad interns at GT Ireland had the wonderful opportunity to personally meet the Prime Minister of Ireland Gordon Brown during their internship. Twenty biomedical engineering students accounted for the largest group sent by major attributable to the efforts of two professors, Dr. Thomas Barker and Dr. Barbara Boyan of the Walter H. Coulter Department of Biomedical Engineering. Professors Barker and Boyan established the study and work abroad programs in the BME department.

According to data maintained by the Division of Professional Practice (DoPP), 946 students have expressed interest to work abroad and 516 have submitted an application. As a result of this demand the Work Abroad Program staff is focusing on the development of work abroad partnerships though progress is constrained because of staffing. An additional 44 employers registered with the DoPP in 2007-2008 bringing the total to 65 companies and eight third party providers. The Work Abroad staff will expand its services to students in 2009 by adding a mandatory Safety Abroad and Cross-Cultural Orientations.

Ms. Debbie Gulick, Director of the Work Abroad Office, serves as the Chair of the Global Engineering Internship Program (GEIP) a consortium program of which the only two American universities—Georgia Tech and Massachusetts Institute of Technology--are members. For more information on the Work Abroad Program: <<http://www.workabroad.gatech.edu/index.php>>. For more about the GEIP, visit: <<http://www.gee-geip.org/>>.

International Research Experiences

The staff of the Undergraduate Research Opportunities Program (UROP) Office and the Office of International Education continued to hold discussions on the process of developing overseas research collaborations for undergraduate students especially students participating in the International Plan.

IP MILESTONE 3: MIDPOINT PROGRESS REPORT TO CAMPUS

The QEP Steering Committee began providing annual reports to the GT leadership and campus in 2006. Additionally the committee members have presented annual findings at the spring Deans' Meeting. The annual impact reports are available on the GT Web site at:

<<http://www.provost.gatech.edu/index.php?subject=lohmann§ion=Resources>>.

IP MILESTONE 4: ESTABLISH CULMINATING COURSES FOR FY09

Capstone Course Development

Reaching another milestone while looking ahead to FY09, the development of IP capstone courses began and gained approval by the Institute Undergraduate Curriculum Committee (IUCC) and Academic Senate. The IP program office began collaboration with the Office of the Registrar to implement the necessary course schedule infrastructure to allow for registration as well having courses posted in the GT catalog. Fifteen of the 23 participating academic units submitted a capstone proposal to the IP committee for review of content and for final approval. To date, seven proposals are approved and will appear in the Fall 2008 Class Schedule database. The IP program office and Committee continue to work with participating academic units on developing capstones that fulfill the course parameters established by the IP Committee in March 2006.

Documenting Curriculum Integration

Curriculum integration was a multifaceted and ongoing task for this year. The purpose of curriculum integration is to facilitate the completion and tracking of program requirements. Briefly, students enrolled in the IP must complete the following requirements:

- a. Complete 26 weeks abroad within two terms: studying, working, or researching.
- b. Complete three internationally-oriented courses.
- c. Demonstrate proficiency in a second language.
- d. Complete an IP capstone course.

The IP Coordinator established IP-specific courses intended to ensure participating students' transcripts reflect each student's study time spent abroad in fulfillment of IP requirements. The Work Abroad Program Office had already established similar courses for students interning abroad in fulfillment of this requirement. This action will ensure accurate tracking of IP requirements in Georgia Tech's degree auditing system that also include completion of the language requirement, internationally-oriented courses, and the capstone course. Doing so will facilitate student advisement throughout the student's enrollment period in assessing curriculum progress and needs. To date capturing enrollment in and completion of IP-related coursework and international experiences is a labor-intensive process.

2008-2009 INTERNATIONAL PLAN MILESTONES

- ENROLL 300 ADDITIONAL STUDENTS IN THE INTERNATIONAL PLAN
- FIRST COHORT GRADUATES (FROM FY06)
- SUMMATIVE ASSESSMENT OF GRADUATING STUDENTS BEGINS: SURVEYS, TESTS, LANGUAGE PROFICIENCY TESTING, AND REFLECTIVE ESSAY

INTERNATIONAL PLAN COMMITTEE [FALL 2007 AND SPRING 2008]

Dr. Terry Snell, *Chair*, School of Biology, College of Sciences
Dr. Willie Belton, School of Economics, Ivan Allen College
Dr. Paul Benkeser, Wallace H. Coulter of Department of Biomedical Engineering, College of Engineering
Dr. Molly Cochran, the Sam Nunn School of International Affairs, Ivan Allen College
Dr. Bettina Cothran, School of Modern Languages, Ivan Allen College
Dr. Douglas Flamming, School of History, Technology, and Society, Ivan Allen College
Dr. James Foley, School of Interactive Computing, College of Computing
Dr. Dana Hartley, Undergraduate Studies Office, Office of Undergraduate Studies and Academic Affairs
Dr. Christopher Jarrett, Architecture Program, College of Architecture
Dr. Charles Parsons, College of Management
Dr. Howard Rollins, School of Psychology, College of Sciences
Dr. David Sanborn, George W. Woodruff School of Mechanical Engineering, College of Engineering
Dr. Lakshmi Sankar, School of Aerospace Engineering, College of Engineering
Dr. Cameron Tyson, School of Chemistry and Biochemistry, College of Sciences
Dr. Donald Webster, School of Civil and Environmental Engineering, College of Engineering
Mr. David White, School of Interactive Computing, College of Computing
Dr. Douglas Williams, School of Electrical Engineering, College of Engineering
Dr. Chen Zhou, H. Milton Stewart School of Industrial and Systems Engineering, College of Engineering

OFFICE OF INTERNATIONAL EDUCATION

Ms. Amy Henry, Director of Education Abroad
Ms. Karen Pierce, International Plan and Curriculum Integration Coordinator
Ms. Sheila Schulte, Director of International Student and Scholar Services

DIVISION OF PROFESSIONAL PRACTICE

Mr. Thomas Akins, Executive Director
Ms. Debbie Gulick, Director, Work Abroad Program Office

UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM OFFICE

Dr. Karen Harwell, Director
Ms. Fadrika Prather, Project Coordinator
Ms. Savannah Gowdy, Student Assistant

UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM (UROP)

2007-2008 GOALS AND IMPACT

UROP MILESTONE 1:

ENROLL 150 ADDITIONAL UNDERGRADUATE STUDENTS IN RESEARCH AND INCREASE PARTICIPATION FROM UNDER-REPRESENTED DISCIPLINES

Overall enrollment in undergraduate research classes essentially remained the same (an increase of 26 enrollments) from AY2007 to AY2008, bringing the total number of enrollments to 1,816 participating in AY2007-08⁵. Students in the Ivan Allen College have more than doubled their participation since AY2005. College of Sciences has seen a 73.5 percent increase in enrollments over the past four academic years. The College of Engineering, traditionally an active participant, realized a 14% gain, experiencing an all-time participation high of over 1,000 enrollments during the academic year. College of Management students participate at approximately the same level each year. Participation in the College of Architecture and College of Computing both decreased during the past academic year. Table 7 provides academic year totals from the past four years. Also of interest, but not included in Table 7, is a preliminary count of enrollment for summer 2008 of 419 students, the highest participation during this semester over the past four academic years--an increase of 13 percent.

Table 7: Participation in Undergraduate Research AY 2005-2008 (Enrollments)

	AY 2005	AY 2006	AY 2007	% OF TOTAL AY2007	AY 2008	% OF TOTAL AY2008
Architecture	70	61	95	5.3%	19	1%
Computing	147	112	221	12.3%	90	5%
Engineering	555	675	920	51.4%	1045	57.5%
Ivan Allen	47	101	118	6.6%	116	6.4%
Management	9	8	11	0.6%	11	1%
Sciences	309	366	425	23.7%	535	19.5%
Other	8	11	n/a	n/a	n/a	n/a
TOTAL	1221	1334	1790	100%	1816	100%

The Institute is also interested in how many students participate in undergraduate research for more than one semester. The QEP goal is for over 70 percent of students who participate to do so for multiple terms. Statistical reporting tools for determining this are under development in conjunction with Institutional Research and Planning. However, preliminary results from AY 2008 are presented by college in Table 8. While just a snapshot in time (AY2008), around 50 percent of Georgia Tech students in any given year are participating in research multiple times. Around 60 percent of the College of Sciences students are participating multiple times per year.

⁵ It is important to note that this number reflects only students who have enrolled in one of over 100 undergraduate research courses (for credit or for audit) and does not necessarily capture the complete number of students participating in research, especially those being employed as research assistants. This is true of all data presented in the report.

Table 8: Participation in Undergraduate Research AY 2008 (unduplicated enrollments)

	AY 2008	% MULTIPLE TERMS
Architecture	18	5%
Computing	49	46%
Engineering	556	47%
Ivan Allen	93	20%
Management	10	9%
Sciences	210	61%
TOTAL	936	48%

Of additional interest are the percentages of students in each college participating in undergraduate research. Figure A provides information on participation from both the 2008 Commencement Survey and the 2007 Baccalaureate Alumni Survey of Georgia Tech graduates between 2001 and 2004 which were conducted by the Office of Assessment. While both measures are self-reported involvement by students and graduates, a steady growth trend can be seen in the past six years.

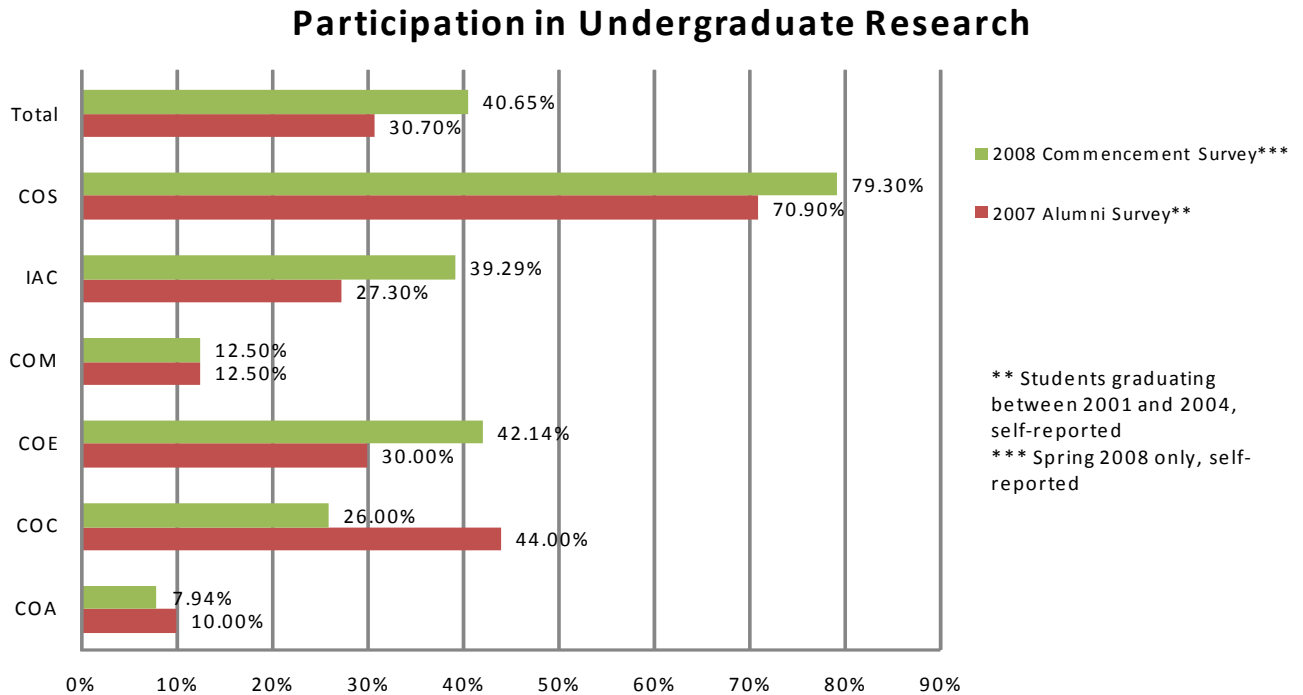


Figure A: Percentage Participation in Undergraduate Research by Percentage of Enrollment in College, AY2008

Additional data on undergraduate research participation is available by school and other demographics upon request. Participation is normally for course credit (80%) and mainly occurs during fall and spring semesters, as expected. Statistics also show that an increasing number of female students are participating in undergraduate research, 38 percent. This is compared to an overall female enrollment at Georgia Tech

of 26 percent. Participation by minority students is also growing, particularly among African American (32% increase in AY2008) and Hispanic (15% increase in AY2008) students. During AY 2008, 36 percent of Hispanic and African American students participated in undergraduate research, a percentage much higher than the total institute participation.

Students surveyed in the program report gains in confidence levels and self-assessment of skills development related to problem-solving ability, communication skills, and current knowledge of the discipline, among others. A more formal report on such findings will be available at the end of Summer 2008 as mentioned in this report's section on Plan Assessment.

Recruitment activities during 2007-2008 included participation in the freshman orientation marketplace fair, information sessions held in the student center and in multiple GT1000 freshman orientation classes, participation in Presidential Scholar recruiting, among other events. During summer of 2007, freshman orientation activities were expanded to include speaking at two back-to-back sessions on undergraduate research. The Student Advisory Board for Undergraduate Research (SABUR) also held several events at the library. A new general brochure outlining opportunities was also created and printed in May 2008 to be used for general recruiting. The annual Undergraduate Research Spring Symposium and Awards was held in April 2008 and enjoyed a 20 percent increase in participation. This continues to be the program's signature event and tool for outreach. The UROP workshop series continued to be popular with students as well.

Torchbearers within the schools were encouraged to hold school-level information sessions and possible research events. College of Computing sponsored its annual poster competition in April 2008. The School of Electrical and Computer Engineering and the School of Aerospace Engineering each held information sessions and fairs for freshman and transfer students at which students presented posters and UROP provided an information booth. The College of Management also conducted an information session with a small group of interested faculty and undergraduate students which resulted in the beginning of several research projects. To the knowledge of the UROP office, no other formal events were held in the units. An Institute-wide information session for the Research Option was sponsored by the UROP office with good attendance by students with a wide variety of academic majors. An Undergraduate Research Facebook Web page was created for publicity purposes and the Student Advisory Board of Undergraduate Research continued to hold research-related events as well as served as ambassadors for the program.

UROP MILESTONE 2: 35 STUDENTS ENROLLED IN THE RESEARCH OPTION: FIRST GRADUATES EXPECTED IN THE RESEARCH THESIS OPTION

Work continued in laying the foundation for the administration of the Research Option including holding a new information session for prospective students, providing additional resources for students and faculty mentors, and revising website information. An additional three schools (Biomedical Engineering, Civil and Environmental Engineering, and Economics) were approved for participation in the Research Option, a total of 17 schools.

During AY 2008, 32 students graduated with the Research Option (see Figure B for a figure of participation inception to date). An additional two completed all requirements in advance of graduation. Participation in the program continues to steadily increase and remain at or above QEP goals. An additional 72 students have indicated an interest in completing the Research Option to the UROP with expected graduation dates ranging between Fall 2008 and Spring 2011. Unfortunately three students

participating in the program this year did not graduate with the option for various reasons, including not completing the thesis before the deadline, not completing the LCC 4700 course, and not turning in required paperwork and approvals. Steps are being taken to address the challenges behind these non-completions.

Students participating in the program report that the in-depth research experience would distinguish them from other graduate and professional school applicants. Additional assessment of gains in skills development and enhanced learning will be assessed in the third year of the program (refer to the Plan Assessment section of this report for additional details related to student learning outcomes).

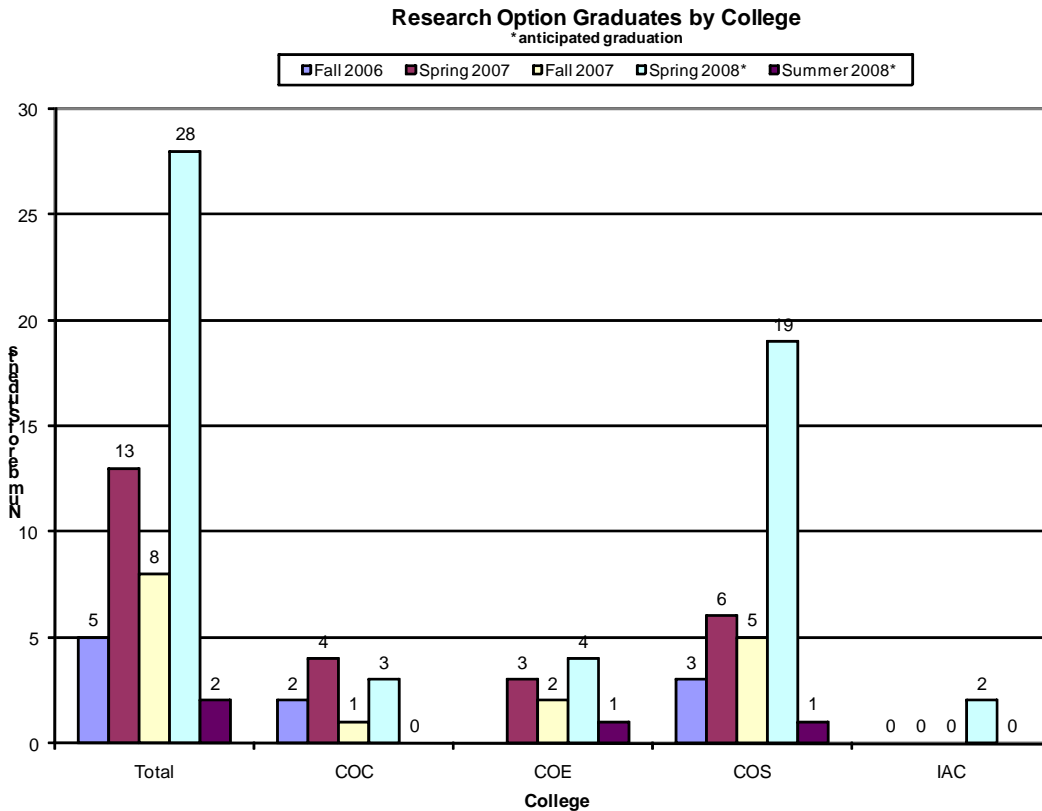


Figure B: Research Option Graduates by College, Fall 2006 – Summer 2008

**URO P MILESTONE 3:
MIDPOINT PROGRESS REPORT TO CAMPUS**

The QEP Steering Committee began providing annual reports to the GT leadership and campus in 2006. Additionally the committee members have presented annual findings at the spring Deans’ Meeting. The annual impact reports are available on the GT Web site at:

<<http://www.provost.gatech.edu/index.php?subject=lohmann§ion=Resources>>.

**UROP MILESTONE 4:
ONE MILLION DOLLARS OF THE \$2.5 MILLION ENDOWMENT RAISED**

The UROP program was chosen as one of three finalists for the Class of 1983 Reunion Gifts but was ultimately not chosen for support. Proposals were submitted to National Science Foundation for two possible programs involving UROP as a partner. Results of those submissions have not been announced. Additional discussions with other organizations on campus about possible funding partnerships are ongoing. Additional work on fundraising will continue in 2008-2009. No PURAs were endowed this year in addition to the two awards endowed by the School of Aerospace Engineering last year.

ADDITIONAL PRIMARY ACTIVITIES SUPPORTED BY THE QEP

Undergraduate Research Journal

A charter was granted by the Student Publications Committee to begin a new undergraduate research journal, *The Tower*. A founding editorial board was named and an initial call for papers distributed. The inaugural issue of the publication is planned for fall 2008. Over 40 students participated as reviewers, submitters, and production and marketing staff this past year.

Mentoring Workshop

Over 60 graduate students and faculty participated in our annual Mentoring Undergraduates in Research Workshop held in conjunction with the Center for the Enhancement of Teaching and Learning.

Materials, Supplies, and Travel Grants

In response to faculty and students needs, proposals were solicited for an annual materials, supplies, and travel grant to support undergraduate research. Over \$26,000 was granted to 21 faculty members to support over 32 students in need of additional funding for materials to support research and travel necessary to perform research activities away from Georgia Tech.

Research Option Mentor Grants

Over \$17,000 was awarded to 31 faculty mentors in support of students completing the Research Option. Funding will go toward materials and supplies, graduate student mentor support, and travel.

2008-2009 UNDERGRADUATE RESEARCH OPPORTUNITIES MILESTONES

- ENROLL 225 ADDITIONAL STUDENTS IN RESEARCH
- ENROLL 50 STUDENTS IN THE RESEARCH OPTION
- PARTICIPATION IN SPRING RESEARCH SYMPOSIA INCREASED AND QUALITY IMPROVED
- SUMMATIVE ASSESSMENT BEGINS: GRADUATING SENIORS COMPLETE SURVEYS AND REFLECTIVE ESSAY

UNDERGRADUATE RESEARCH ADVISORY GROUP:

Dr. Amy S. Bruckman, *Chair*, School of Interactive Computing, College of Computing
Dr. E. Kent Barefield, Office of the Dean, College of Sciences
Dr. Cliff Henderson, Chemical and Biomolecular Engineering, College of Engineering
Dr. Jonathan Gordon, Director, Office of Assessment
Dr. Sabir Khan, Office of the Dean, College of Architecture
Dr. Charles Parsons, Office of the Dean, College of Management
Mr. Ashish Patel, Biomedical Engineering, Student Representative
Dr. Jud Ready, Georgia Tech Research Institute
Dr. Lisa Yaszek, School of Literature, Communication, and Culture, Ivan Allen College

STUDENT ADVISORY BOARD FOR UNDERGRADUATE RESEARCH (SABUR):

Ms. Savannah Gowdy, *Chair*, Major: Civil and Environmental Engineering
Ms. Farhana Abdullah, Major: Science, Technology, and Culture
Mr. Nathaniel Bloodworth, Major: Biomedical Engineering
Mr. Ted Chen, Major: Biomedical Engineering
Mr. Justin Harper, Major: Management
Ms. Julie Kent, Major: Economics and International Affairs
Ms. Martha Lesniewski, Major: Materials Science and Engineering
Ms. Dianne Palladino, Major: Psychology
Ms. Ramya Parthasarathy, Major: Biomedical Engineering
Ms. Amira Pettus, Major: Science, Technology and Culture
Mr. Jiuguang Wang, Major: Electrical and Computer Engineering
Mr. Michael Wildes, Major: Biomedical Engineering

RESEARCH OPTION IMPLEMENTATION ADVISORY GROUP:

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Dr. Amy Bruckman, Ms. Kathy Earwood, and Mr. David White
College of Engineering
Dr. Pradeep Agrawal, Dr. Paul Benkeser, Dr. Brent Carter, Dr. Lakshmi Sankar,
Dr. Don Webster, and Dr. Doug Williams
Ivan Allen College
Dr. Amy D'Unger, Dr. Usha Nair-Reichert, Dr. John Tone, and Dr. Lisa Yaszek
College of Sciences
Dr. Ed Conrad, Dr. Gregory Corso, Dr. Dana Hartley, Dr. Michael Loss, Dr.
Terry Snell, and Dr. Cam Tyson

UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM OFFICE:

Dr. Karen Harwell, Director
Ms. Fadrika Prather, Project Coordinator
Ms. Savannah Gowdy, Student Assistant

ASSESSMENT OF THE IP AND UROP

2007-2008 MILESTONES AND IMPACT

The Office of Assessment is responsible for the overall evaluation of the Quality Enhancement Plan (QEP). Presented on the following pages is a summary of the various assessment and evaluation activities directed toward program objectives and student learning outcomes in the Undergraduate Research Opportunities Program (UROP) and the International Plan (IP). It should be noted that many of the evaluation activities are ongoing and results are sometimes preliminary. These results have been shared with each plan's key program persons and the findings have been presented at various national and international academic conferences.

ASSESSMENT AND EVALUATION OF UNDERGRADUATE RESEARCH

Assessment and evaluation activities related to undergraduate research have been focused on three areas: 1) formative feedback obtained from focus groups conducted in the course LCC 4700, Writing an Undergraduate Thesis; 2) pre/post undergraduate research surveys, and; 3) creation and use of a rubric to evaluate the technical writing traits of the required research thesis.

Focus Groups

The Office of Assessment conducted annual focus groups of students enrolled in LCC 4700. The course is taught by faculty with experience in technical communication and is designed to assist students in the presentation of their research results. Essentially, the course functions as a capstone to the Research Option (RO). This year, three separate focus groups were held toward the end of the spring semester and results were forwarded to the program director.

Results from the focus groups found that the majority of students chose to pursue the RO to gain experience and for the perceived benefits of having such a designation on their transcript when applying for graduate school. While the majority of students were either admitted to or considering graduate school, even those students who were planning on different careers reported that they derived benefits from participating in this program. Students reported gaining confidence in their skill as researchers as a result of the Research Option. Specifically, the students described how their problem-solving abilities as researchers had developed as they moved through the research process: from developing a research idea, to implementing the research, and then writing up a formal report of their findings. The specific benefits provided by LCC 4700 included imposing deadlines to get the thesis written and acquiring written, oral, and electronic communication skills. Students offered a number of suggestions for improving the thesis option including better organization and increased communication between the Office of Undergraduate Research Opportunities Program (UROP) and the advisors, more workshops related to writing the thesis, and adjusting the timing of some of the assignments in order to better approximate the way that researchers actually go about writing up their findings.

Undergraduate Research Surveys

The Office of Assessment has developed a survey to measure student perceptions of a variety of research skills, competencies, and general self-efficacy that is administered before and after each undergraduate research experience. In AY2007-2008, 156 students completed the pre-experience survey, 233 completed the post-experience survey, and 71 students were able to be matched on a pre-post basis. The goal of this survey project is to collect enough data to determine what effects the undergraduate research is having on student experiences. At this point, results are inconclusive. Preliminary results of this analysis are expected to be available in AY 2008-2009 for Research Option students. Because many students do not formally declare themselves as "Research Option" at an early stage in studies, more time and data

collection are required to create the appropriate cohorts to permit a robust statistical analysis of the results.

Writing Rubric

A rubric to evaluate the quality of technical writing for undergraduate research theses has been developed by faculty involved in teaching technical communications at Georgia Tech, and the Office of Assessment continues to make modifications to it in response to feedback obtained by scorers. In 2007-2008, an outside reviewer scored each research thesis that was submitted for recognition under the Research Option. The rubric encompasses a variety of aspects of a thesis; for example, the abstract, problem statement, literature review, and presentation of experimental results. Preliminary analysis of the scores from 37 theses submitted shows that most students “met” or “mostly met” the expectations on the various writing elements involved in the thesis. However, there was considerable variability in scores regarding the crafting of a research abstract. This area has been brought to the attention of the LCC 4700 instructors and will be addressed in the curriculum next year. Additionally, there has been some concern regarding variability in writing and mechanics (e.g., grammatical usage). Some of the theses that were approved by the academic departments were judged deficient in this area. This concern will be brought to the attention of the Undergraduate Research Advisory Group and addressed in the coming academic year.

ASSESSMENT AND EVALUATION OF THE INTERNATIONAL PLAN

The Office of Assessment has undertaken a quasi-experimental non-equivalent comparison group design to evaluate the effectiveness of the International Plan (IP). There are several dimensions to this evaluation as shown below and then discussed individually

- a. Use of national survey data such as the National Survey of Student Engagement (NSSE) and the Cooperative Institutional Research Program (CIRP) Freshman Survey.
- b. Conduct and analysis of focus groups of IP participants.
- c. Use of a longitudinal study using the Intercultural Development Inventory (IDI), a psychometrically validated instrument designed to measure facets of intercultural sensitivity.
- d. Use of the ACTFL Test of Oral Proficiency Interview (OPI).
- e. Use of the Global Knowledge Inventory to measure knowledge of topics in international relations, global economics and comparative culture.
- f. Conduct and analysis of pre/post semester-abroad and summer program surveys.

National Survey of Student Engagement

Using data obtained from the 2007 NSSE, a comparison was performed between first-year students enrolled in the IP (n=57) and first-year students not enrolled (n=859).⁶ Both the overall benchmark scores as well as individual items were examined for differences. No statistically significant differences were found on the basis of any of the five NSSE benchmark scores; however, the benchmark score for Student Faculty Interaction approached significance, with IP students reporting higher levels of interaction (p=.070). Students in the IP reported a higher institutional contribution to their ability to *understand people of other racial or ethnic backgrounds* (p=.021) and IP students also reported a *higher level of satisfaction with their overall experience at Georgia Tech* (p=.004). However, IP freshmen did not significantly differ from their non-IP counterparts on any of the other items designed to measure curricular and co-curricular engagement.

⁶ Due to a disproportionate number of female respondents on the NSSE (as well as a disproportionate number of females enrolled in the IP), all comparisons were performed controlling for the effects of gender. For full details on the 2007 NSSE, please see http://www.assessment.gatech.edu/eReports/NSSE_2007_Report_Final_1_11_2008.pdf

CIRP Freshman Survey

Since 1966 Georgia Tech has participated in the Cooperative Institutional Research Program (CIRP), a nationwide study run by the Higher Education Research Institute (HERI) at the University of California Los Angeles. Each year incoming first-year students at participating institutions complete the Student Information Form, and the results are used by HERI as part of a longitudinal study. Incoming 2005, 2006, and 2007 Georgia Tech first-year students were asked to complete the CIRP student survey during their summer orientation program. The Office of Assessment was able to match 157 IP participants to their respective CIRP responses. This group was compared with a cohort of 2,974 first-year student CIRP respondents that could be confirmed as not being IP participants. A comparison was conducted of the responses of GT students to those attending both public “high-selectivity” institutions and private “very high selectivity” schools. The results of this comparison are presented in Table 9⁷.

The results demonstrate that students who have enrolled in the IP differ significantly from their Georgia Tech peers on several dimensions. IP students rate themselves higher in their ability to understand others, self-understanding, and writing ability. GT students in the IP also differ in their objectives in attending college. IP students are more likely to feel that leadership skills, the ability to influence the political structure, and gaining a general education and appreciation of ideas are “very important” reasons for college attendance. We also noted higher ratings from IP participants relative to other first-year students on the importance of improving their understanding of other countries and cultures.

Also worthy of note are the socioeconomic differences between students in the IP and other GT freshmen. IP students are significantly more likely to report higher levels of parental income and are more likely to have parents with a graduate education. Finally, many of the characteristics and responses of IP participants bear a closer resemblance to students attending “very high selectivity” private institutions (as opposed to “high selectivity” public institutions). Given that one of the goals of the IP is to attract students who might otherwise have attended these private schools, it would appear that the survey data supports the achievement of this objective.

⁷ It should be noted that while the statistical comparisons presented here are based on the unweighted results, these differences remain when the samples are controlled on the basis of gender.

Table 9: International plan freshman compared to other first year students: results from CIRP freshman surveys 2005–2007

	GT IP N=157	GT Non-IP N=2974	Public High Selectivity	Private Very High Selectivity
*p<.05; **p<.01 (two-tailed) Difference between GT IP and GT Non-IP All figures in percent				
Socioeconomic Characteristics				
Parental Income Over \$150,000	33.8*	24.5	26.0	42.8
Father with some graduate education or graduate degree	49.7*	39.4	36.2	57.5
Mother with some graduate education or graduate degree	37.4*	28.9	27.0	43.8
Ability Self-Ratings (Above average and highest 10%)				
Understand others	72.7**	61.2	67.3	70.1
Self Understanding	68.8**	60.5	60.7	66.5
Writing Ability	63.0**	49.8	52.5	63.4
Objectives considered “Essential” Or “Very Important”				
Influencing the Political Structure	31.4**	17.5	21.1	25.7
Participating in a Community Action Program	36.2**	24.1	30.3	38.2
Keeping up to date with political affairs	55.6**	39.6	43.2	53.3
Improving my understanding of other countries and cultures	88.3**	49.4	59.0	68.7
Becoming an authority in field	71.7**	61.2	58.3	66.9
Influencing Social Values	43.1**	30.7	39.7	43.2
Becoming involved in programs to clean up the environment	34.0**	23.1	28.8	31.1
Help promote racial understanding	45.8**	28.6	36.5	41.5
Becoming a community leader	47.1**	32.3	37.3	43.8
Develop a meaningful philosophy of life	56.6*	46.2	52.3	62.5
Reasons noted as “Very Important” in deciding to go to college †				
To gain a general education and appreciation of ideas	81.8**	65.7	68.1	80.1
To make me a more cultured person	64.8**	35.4	47.0	58.4

† - Questions only asked on 2005-2006 surveys (GTIP N = 92, GT Non-IP N = 2113)

Public high selectivity institutions include: Florida State University, Iowa State University, Miami University, Rutgers University-New Brunswick, SUNY-Binghamton, U of California-Los Angeles, U of California-San Diego, U of Florida, U of Florida, U of Michigan, U of Minnesota-Twin Cities, U of North Carolina-Chapel Hill, U of Pittsburgh, U of Vermont, U of Virginia, Virginia Polytechnic Inst and St U.

Private very-high selectivity institutions include: Brandeis University, California Institute of Technology, Carnegie-Mellon University, Case Western Reserve University, Cornell University, Duke University, Emory University, Johns Hopkins University, Rice University, U of Notre Dame, U of Rochester, and Vanderbilt University.

Focus Groups with International Plan Students

The Office of Assessment conducts annual focus groups of students participating in the International Plan. This year, two sessions were conducted and the results were disseminated to the Office of International Education and the International Plan Committee. The primary purpose of the focus groups this year was to learn about the motivation, preparation, and attitudes about study abroad as IP students. Participants had not yet travelled abroad when the session was held.⁸ Approximately half of the students indicated that learning a foreign language was a primary motivation in choosing to participate in the IP. However, many students had trouble articulating exactly why they chose the more rigorous IP over other study abroad options. While some students expected they would take jobs outside the United States, others expected to have jobs that would at least require periodic international travel.

Students reported that the IP advising was a piecemeal process requiring a lot of work on the part of the student to “put it all together.” However, most participants did not necessarily see that as a major problem. Some students asked for more social networking opportunities for IP students, and further suggested that there should be a Google map that would put a “pin” in places GT students were studying/working to encourage networking while abroad. The Office of International Education as well as the Work Abroad Program implemented this in direct response to the focus group session.

Students believed that one challenge facing those managing the International Plan is whether the vision is one of breadth (learning a little about a variety of areas and cultures) or depth (language fluency and concentration in one specific area). Put another way, the question students feel important is whether the program is designed for students to learn to think globally and be prepared to live or work in many different countries, or is the goal to be an expert in one region and upon graduation market oneself that way. Many students felt this was a choice that should best be left to the individual student. One student synthesized a vision of the IP quite succinctly:

“One of the nice things about Tech as a whole, especially in the more technical fields, it teaches us the questions to ask....not necessarily the specifics.... It teaches us to know when to ask the questions and what questions to ask. And I think being globally competent means that you know the right questions to ask so when you are doing a scientific study in China or overseeing manufacturing in Taiwan or negotiating a business deal in Europe...doing purchasing agreements in South America... that you know what questions to ask. You may not know the answers in every region of the globe, but you at least know what questions to ask.”

Intercultural Development Inventory

One of the primary means Georgia Tech is using for assessing student growth in the outcomes of intercultural assimilation and global disciplinary practice is the Intercultural Development Inventory (IDI). Since the IDI is a key to the overall evaluation plan of the IP, a brief explanation of the instrument and its underlying theory are warranted in the present context.

The IDI was developed by Drs. Mitchell R. Hammer and Milton J. Bennett as an instrument designed to measure intercultural sensitivity and has been found to be a reliable and reasonably valid measurement

⁸ The Office of Assessment intends to follow up with the focus group participants after they have completed their international sojourns.

tool. The IDI is based on Bennett’s Developmental Model of Intercultural Sensitivity (DMIS).⁹ The DMIS postulates six stages of increasing sensitivity to cultural difference. As one’s experience of cultural difference becomes more sophisticated, one’s competence in intercultural relations increases. Just as people have more or less sophisticated experiences toward watching football (in either the American or the global variety) or wine tasting, people have more or less sophisticated experiences with intercultural relations. A description of each developmental stage is presented in Table 10.

Table 10. Stages in the Developmental Model of Intercultural Sensitivity

	Developmental Stage	Primary Orientations
Ethnocentric Stages	Denial	No perceived differences among cultures; avoidance of cultural difference
	Defense	Views cultural differences as “us versus them”; feelings of superiority of one’s culture over others
	Minimization	Recognition of common humanity regardless of culture; recognition of superficial cultural differences
Ethnorelative Stages	Acceptance	Perceive cultural differences within context; culturally self-aware and curious about other cultures
	Adaptation	Able to consciously shift perspective and alter behavior amidst different cultures; expresses intercultural empathy
	Integration	People truly bicultural or multicultural; do not define themselves in terms of any one culture (very rare)

The DMIS posits three ethnocentric stages of development and three ethnorelative ones—each associated with more sophisticated cognitive ability to recognize and appreciate cultural differences. While the IDI is not at present able to discern each of these six stages of intercultural development, it is able to reliably measure a Denial/Defense orientation, Minimization, and an Acceptance/Adaptation orientation. The instrument is comprised of 50 statements, to which a respondent indicates agreement/disagreement on a five-point Likert scale. The IDI yields a holistic developmental score along with a perceived score indicating where the subject thinks he or she is.

The IDI has been administered as a pre-test measure to incoming GT first-year students through a first-year seminar course (in 2005), and through FASET sessions (2006-2007). IP participants who did not complete the IDI at FASET orientation took the survey at an IP orientation session. To date, a total of

⁹ Bennett, M. (1986). Towards Ethnorelativism: A Developmental Model of Intercultural Sensitivity. In R.M. Paige (ed.), *Cross-Cultural Orientation: New Conceptualizations and Applications*. New York: University Press of America, 27–70.

3,781 students have completed the instrument. Pre-test results are presented in the table below. Previous research conducted with the IDI has revealed gender differences in intercultural development, with females generally having higher scores. Consequently, all comparisons made here control for gender. As can be seen, there are significant gender differences among GT students. Gender also plays a role in differences seen across different ethnic groups. While males of various ethnicities are not statistically dissimilar, there are differences in intercultural development among females. For example, black females at GT are much more likely to be in Minimization (70.9%) than Asian, white or Hispanic females (52.3%, 51.8%, and 45.9%, respectively). It is also interesting to note that there are no differences in intercultural development between female IP and non-IP students; however there are differences for among males. Previous group differences will be taken into account when the post-test data are analyzed. It is expected that the first cohort of freshmen measured with the IDI will be graduating seniors in AY 2008-2009. Thus, post-test data will be collected in the coming year and preliminary results should be available in Summer 2009.

Table 11. Intercultural Development Inventory Pre-test Results

Characteristic	IDI Developmental Stage		
	Defense/Denial (n=2061)	Minimization (n=1655)	Acceptance/ Adaptation (n=65)
Gender***			
Female	46.6%	51.7%	1.7%
Male	58.9%	39.4%	1.7%
Ethnicity			
Asian or Pacific Islander	51.6%	46.6%	1.8%
Black (Non-Hispanic Origin)	44.9%	51.5%	3.6%
Hispanic	54.0%	40.9%	5.1%
White (Non-Hispanic Origin)	55.6%	43.0%	1.4%
College			
Architecture	53.5%	45.5%	1.1%
Computing	58.1%	39.5%	2.4%
Engineering	55.9%	42.1%	2.0%
Ivan Allen	47.9%	51.0%	1.0%
Management	52.7%	46.8%	1.4%
Sciences	50.7%	48.1%	1.2%
Citizenship			
International	48.8%	48.4%	2.8%
U.S. Citizen	55.0%	43.4%	1.6%
IP Participant-Male**			
Yes	46.9%	50.3%	2.8%
No	59.8%	38.7%	1.6%
IP Participant-Female			
Yes	42.9%	54.3%	2.9%
No	47.1%	51.2%	1.6%
*p<.05, ** p<.01, ***p<.001 Chi-square tests, controlling for gender			

Second Language Proficiency

Students pursuing the foreign language option in the International Plan are required to complete the American Council on the Teaching of Foreign Languages (ACTFL) test of Oral Proficiency Interview (OPI), a valid and reliable instrument designed to assess how well a person speaks a foreign language. Students are required to achieve a proficiency of at least “Intermediate High” in order to graduate with the IP designator. To date, 12 students have taken the OPI and 11 students have achieved this minimum level of proficiency. The languages tested include German (3 students), Spanish (4 students), French (3 students), and Mandarin (2 students). Proficiency results are presented in Table 12.

Table 12. Student Completion of Oral Proficiency Interview

Proficiency Level	Number of Students
Novice-Low	0
Novice-Mid	0
Novice-High	0
Intermediate-Low	0
Intermediate-Mid	1
Intermediate-High	1
Advanced-Low	4
Advanced-Mid	3
Advanced-High	2
Superior	1

Does not meet IP requirement
 Does meet IP requirement

Global Knowledge Inventory

To assess the learning outcomes related to Comparative Global Knowledge, the Office of Assessment has been working with faculty in the Schools of Psychology, Economics, and the Sam Nunn School of International Affairs to develop a psychometrically valid test of global knowledge called the Global Knowledge Inventory (GKI). The project has been challenging—there are no national instruments available to model against, and the number of courses available to GT students to satisfy the IP course requirements in International Relations, Global Economics and Comparative Society/Culture is quite large. Test developers have been tasked with crafting items that will discern degrees of “general global knowledge”—the type of knowledge that comes from coursework, travel experiences, and from life-long learning. To date, we have piloted versions of the GKI on 644 students in various international relations and economics courses. The team is using Item Response Theory to hone the questions, and it is also developing additional items to test further domains of knowledge. It is still too soon to report any results from the data collected. The development plan calls for further pilot testing of the instrument in Fall 2008, and deployment of the test in Spring 2009. IP student performance will be measured against other GT cohorts in a quasi-experimental design. The results will be informative for further IP curriculum planning.

International Study and Work Abroad Surveys

The Office of Assessment has developed surveys to measure student perceptions of a variety of academic, social and work skills, competencies, and general self-efficacy that are administered before and after both short-term and semester long study abroad experience, as well as international internship experiences. More time is required to collect a sufficiently large sample to permit comparisons between IP students, non-IP students who studied abroad, and other GT students. The Office of Assessment expects to continue data collection in the coming academic year, with the expectation of reporting preliminary results in Summer 2009.

**2008-2009 ASSESSMENT MILESTONES
FOR THE INTERNATIONAL PLAN AND UNDERGRADUATE RESEARCH OPTION
PROGRAM AND RESEARCH THESIS OPTION**

- SUMMATIVE ASSESSMENT OF GRADUATING STUDENT BEGINS: SURVEYS, TESTS, LANGUAGE PROFICIENCY TESTING, AND REFLECTIVE ESSAY

OFFICE OF ASSESSMENT

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ABOUT THE GEORGIA INSTITUTE OF TECHNOLOGY

Georgia Tech, home of the Yellow Jackets, is the No. 7 public university in the nation, according to rankings by *U.S. News & World Report*. Georgia Tech is an innovative intellectual environment with more than 900 full-time instructional faculty and more than 18,000 undergraduate and graduate students representing over 100 countries. The university is a national and international leader in scientific and technological research and education. Over the past decade, overall research expenditures increased by 84 percent to \$355.3 million in 2006, while federal research expenditures increased 129 percent. Georgia Tech now ranks among the top five in research expenditures among universities without a medical school. In addition, Georgia Tech has an estimated \$3.9 billion annual impact within the state of Georgia, according to a 2006 Strategic Economic Development. Throughout its long history, Georgia Tech has always focused its efforts on preparing students to use their innovative skills and strong work ethic to solve real-world problems and improve the lives of people around the globe.



GEORGIA TECH'S SOLAR DECATHLON HOUSE, 2007

GEORGIA TECH'S MISSION AND VISION

Our vision is bold: "Georgia Tech will define the technological research university of the 21st century and educate the leaders of a technologically driven world."

Our mission is clear: "to provide the state of Georgia with the scientific and technological knowledge base, innovation, and workforce it needs to shape a prosperous and sustainable future and quality of life for its citizens." It is achieved through educational excellence, innovative research, and outreach in selected areas of endeavor.

Georgia Tech's mission in education and research will provides a setting for students to engage in multiple intellectual pursuits in an interdisciplinary fashion. Because of our distinction for providing a broad but rigorous education in the multiple aspects of technology, Georgia Tech seeks students with extraordinary motivation and ability and prepares them for lifelong learning, leadership, and service. As an institution with an exceptional faculty, an outstanding student body, a rigorous curriculum, and facilities that enable achievement, we are an intellectual community for all those seeking to become leaders in society. Georgia Tech values its position as a leading public research university in the United States and understands full well its responsibility to advance society toward a proper, fair, and sustainable future. By seeking to develop beneficial partnerships within public and private sectors in education, research, and technology, Georgia Tech ensures relevance in all that it does and assures that the benefits of its discoveries are widely disseminated and used in society.

Georgia Tech pursues its mission by giving the highest respect to the personal and intellectual rights of everyone in our community. In return, we expect that all members of our community will conduct themselves with the highest ethical principles.

The Georgia Institute of Technology continues to be one of the nation's top research universities, distinguished by its commitment to improving the human condition through advanced science and technology.