
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 2007





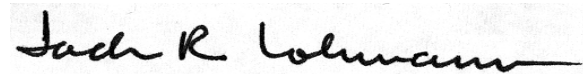
July 10, 2007

Dear Colleagues,

We are at the midpoint in our implementation of Georgia Tech's Quality Enhancement Plan, "Strengthening the Global Competence of and Research Experiences of Undergraduate Students." 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,

A handwritten signature in black ink that reads "Jack R. Lohmann" with a long horizontal flourish extending to the right.

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

2006-07 MILESTONES AND IMPACT

ENROLL 200 STUDENTS IN THE INTERNATIONAL PLAN

This IP goal was to attract 200 new students to participate during the 2006-2007 fiscal year in addition to the goal of attracting 100 students in the first year (2005-2006) for a total of 300 participants combined across the first two years of operation. In fact, as of May 1, 2007, 291 students have been admitted to the International Plan which is very close to the total number established as our goal. An increase in programs was realized as well in 2006-07, moving from 14 B.S. degree programs participating to 24 B.S. degree programs participating of a total of 42 B.S. programs. Because a few students were already meeting most of the requirements of the International Plan with only the Global Economics course and the IP Committee capstone course needed to meet all requirements, six students have already graduated with the IP designator. In addition, it is worth noting the distribution of participants across the six colleges as shown in the table below.

College	Total Number of Students	Percent of Total IP	Percent of College Enrollment
Architecture	18	6.2	2.3
Computing	24	8.2	2.7
Engineering	130	44.7	1.8
Management	30	10.3	2.4
Ivan Allen	77	26.5	9.2
Science	12	4.1	1.0

Recruitment of incoming students has also progressed very well. All potential applicants to Georgia Tech who indicate on a survey that they have an interest in study abroad are sent a version of the International Plan brochure targeted at this group accompanied by a personalized letter from the Associate Vice Provost for International Programs. In addition, each college/school participating in the International Plan distributes information to prospective students about the IP. Finally, a major recruitment effort takes place during Familiarization and Adaptation of Surrounding Environs of Tech (FASET) for students who have paid their deposit to Georgia Tech and so are most likely to attend. Additional mailings occur prior to FASET. During FASET an Office of International Education (OIE) staff member attends each session as well as a representative from each participating college/school to explain the IP and also recruit students into the program. Each school/college is provided guidance on the approximate number students for recruitment by that school/college in order for Georgia Tech as a whole to meet its goal of 250 new students in the program during the 2007-08 fiscal year.

ENGAGE INTERNATIONAL PARTNERS

Study abroad opportunities. A number of initiatives have been developed to facilitate the establishment of new study abroad opportunities. For example, Georgia Tech-Lorraine has enhanced the semester/year abroad program for students in the International Plan who choose to study in Metz, France. Additional French language courses have been added, students are housed with French students in residence halls, and students are able to take some courses in their major that are taught in French. Faculty from ENSAM² and Supélec³ are invited to teach courses for Georgia Tech Lorraine. Alternatively, GT students in the International Plan may elect to take courses offered at either ENSAM or Supélec.

Student exchanges. OIE staff worked with faculty to develop additional student exchange partnerships. In collaboration with Economics, International Affairs and Modern Languages, new student exchanges were

² École Nationale Supérieure d'Arts et Métiers

³ École Supérieure d'Électricité

established with two universities in Japan and one in Korea with current work on a new relationship with a university in Moscow, Russia. In collaboration with the College of Management, new student exchange agreements are in development with Laval University, Montreal, Canada and RSM Erasmus University⁴, The Netherlands. In collaboration with International Affairs, a new collaboration is under development with Ludwig Maximilian University, Munich. In collaboration with the School of Biomedical Engineering, student exchange agreements are under development with the National University of Ireland: Limerick and Galway. In collaboration with the College of Engineering, new student exchanges are under development with Imperial College, London, University Polytechnic Catalan in Barcelona, Spain and Tsinghua University in Beijing, China. As a result 55 IP students studied abroad, 12 with overseas exchange partners and 43 on faculty-led study abroad programs.

International work experiences. During the 2006-07 fiscal year the Division of Professional Practice's Work Abroad Program made significant progress toward arranging international work experiences for IP students and toward providing for those experiences. Sixteen new international partners agreed to provide work experiences for our students. Some of the major companies that GT has established partnerships with are Siemens AG, Continental AG, General Electric's John F. Welch Technology Centre, Expotecnik, Schlumberger, the U. S. Department of State, and WIKA Instrument Corporation. Furthermore, a total of 46 students worked abroad in 19 countries spanning five continents. The top three countries were France (10), Germany (10), and India (6). Of the 46 students 10 were graduate students and 36 were undergraduate students, and of the 36 undergraduate students, four were enrolled in the International Plan. The discipline areas were engineering (25), computer sciences (8), management (6), sciences (2), and international affairs (5). One of the highlights of the year was the GT Work Abroad Fair which involved 30 employers and resulted in 300 student attendees.

International research experiences. The staff of the Undergraduate Research Opportunities Program (UROP) Office and the Office of International Education held discussions on the process of developing overseas research collaborations for undergraduate students especially students participating in the International Plan. A number of GT's overseas partner universities provide research experiences for exchange students, for example. The collaboration between the UROP and OIE will help Georgia Tech help to establish quality overseas research experiences for our students in the near future.

CURRICULUM MATCHING BETWEEN GEORGIA TECH AND INTERNATIONAL PARTNERS

A number of members of the International Plan Committee (IPC) have participated in overseas trips to visit existing or potential new student exchange partners where International Plan students might study. The goal was to ascertain that the courses available at partner institutions match courses GT students would need to graduate in a timely manner and that the quality of the faculty and teaching facilities would meet Georgia Tech's high standards for quality. Visits have been made to, France, Spain, and Germany, as well as Singapore, Shanghai, Tokyo, and Hong Kong over the last two years. Many of these visits have resulted in commitments of GT colleges/schools to accept transfer credit from one or more of the international universities.

In addition to efforts in establishing partner universities, the IPC addressed several key curriculum issues. While some time was spent on petitions from students requesting exceptions to IP policy, the majority of the committee's time involved discussions of higher level policy issues relating to various aspects of the International Plan. Three key aspects of the plan received considerable attention—second language options, criteria for the capstone/culminating course, and future concerns on recruitment and retention.

Language Courses. A policy statement was developed by the IPC on the language options (second language versus English option) and a related discussion about continuity when students plan to study in two or more different countries. Four new full-time language faculty have been added as a direct result of the IP. As a result, new sections of language courses have been added over the past two years to meet the increased demand for language courses generated by the IP. The impact on enrollment in language classes has been significant. Over the past two years, the number of students enrolled in all language classes jumped by 453 students which represents an 11.1 percent increase. It is also important to note that a U.S. Education Department Title VI grant was obtained by Modern Languages, International Affairs, and Economics to support the development of the IP including development of new team taught language courses, development of intensive summer language programs in China and Japan, and the cultivation of new student exchange programs in Japan, China, and Korea.

⁴ Rotterdam School of Management

Required international studies courses. The teaching of international courses has been enhanced in two distinct ways. First, funding has been provided to add new sections of The School of International Affairs courses relevant to the IP in order to meet the higher demand. Second, faculty in the School of International Affairs, the School of Economics, and the School of History, Technology, and Society have been awarded IP grants to establish new courses or revise existing courses for use by students wishing to meet the requirements of the IP. One of the key courses developed as a result of a grant was Global Economics (offered in the School of Economics).

Capstone/culminating courses. The capstone course must integrate international learning and experience into the student's discipline and each discipline is required to submit proposed capstone courses to the IPC for review and approval. Most colleges and schools have now developed at least one version of the capstone course for students in the IP. An IP grant was awarded to the College of Management to facilitate the development of their capstone course.

STUDENTS PLANNING INTERNATIONAL EXPERIENCES IN FY07

Advising students about the IP has been difficult because several critical issues have been addressed in the past six months that affect the ways in which students may complete the program. As a result a new document was written that delineates the current requirements at the end of spring semester, 2006. It was distributed to all members of the IPC as well as to academic advisors within each participating college/school. In addition, several training sessions were held with academic advisors within individual colleges/schools and with study abroad advisors in OIE in an effort to make certain that faculty and staff who advise students are consistent in their advisement. In addition, individuals involved with recruiting or providing IP information during FASET sessions were also given updated information. Lastly, the IP Brochure was revised to reflect changes and a special version of the IP Brochure was developed for enrolled students.

2007-08 INTERNATIONAL PLAN MILESTONES

- ENROLL 250 ADDITIONAL STUDENTS IN THE INTERNATIONAL PLAN
- COMPLETION OF INTERNATIONAL EXPERIENCES FOR FIRST COHORT (FROM FY06)
- DISTRIBUTE MID-POINT PROGRESS REPORT TO CAMPUS INCLUDING FORMATIVE ASSESSMENT OF STUDENT LEARNING OUTCOMES
- ESTABLISH CAPSTONE/CULMINATING COURSES FOR FY09 WITHIN ACADEMIC UNITS

INTERNATIONAL PLAN COMMITTEE [FALL 2006 AND SPRING 2007]

Dr. Terry Snell, *Co-Chair*, School of Biology, College of Sciences
Dr. Charles Parsons, *Co-Chair*, College of Management
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. Gregory Corso, School of Psychology, College of Sciences
Dr. Bettina Cothran, School of Modern Languages, Ivan Allen College
Dr. Douglas Flammig, School of History, Technology, and Society, Ivan Allen College
Dr. James Foley, School of Interactive Computing, College of Computing
Dr. Merrick Furst, Office of the Dean, College of Computing
Dr. Paul Griffin, H. Milton Stewart School of Industrial and Systems Engineering, College of Engineering
Dr. Dana Hartley, Undergraduate Studies Office, Office of Undergraduate Studies and Academic Affairs
Dr. Lawrence Jacobs, School of Civil and Environmental Engineering, College of Engineering
Dr. Christopher Jarrett, Architecture Program, College of Architecture
Dr. David Sanborn, George W. Woodruff School of Mechanical Engineering, College of Engineering
Dr. Lakshmi Sankar, School of Aerospace Engineering, College of Engineering
Dr. John Tone, School of History, Technology, and Society, Ivan Allen College
Mr. David White, School of Interactive Computing, College of Computing
Dr. Douglas Williams, School of Environmental Engineering, College of Engineering

OFFICE OF INTERNATIONAL EDUCATION

Dr. Howard Rollins, Jr., Associate Vice Provost for International Programs
Ms. Amy Henry, Director of Education Abroad
Ms. Karen Pierce, International Plan 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, Assistant Director, Work Abroad Program Office

UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM OFFICE

Dr. Karen Harwell, Director

UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM

2006-07 MILESTONES AND IMPACT

ENROLL 100 STUDENTS AND INCREASE UNDER-REPRESENTED DISCIPLINES

Participation in UROP increased 34.2 percent overall from AY2005-06, bringing the total number of enrollments to 1,790 participating in AY2006-07⁵. The number of Ivan Allen College students has more than doubled over the past three years and increases in the College of Architecture averaged 21.4 percent. Participation in the College of Management has grown by 37.5 percent during the past three academic years. The College of Engineering, traditionally an active participant, realized a 36 percent gain, experiencing an all-time participation high of over 400 students. Participation in the College of Computing has fluctuated in the past two years, but has seen an overall increase in 50 percent over the past three academic years. College of Sciences has seen a 37.5 percent increase over the past three academic years. The table below provides academic year totals from the past three years.

Participation in Undergraduate Research AY 2005-2007

College	AY 2005	AY 2006	AY2007	Percent of Total AY2007
Architecture	70	61	95	5.3%
Computing	147	112	221	12.3%
Engineering	555	675	920	51.4%
Ivan Allen	47	101	118	6.6%
Management	9	8	11	0.6%
Sciences	309	366	425	23.7%
Other	8	11	n/a	n/a
TOTAL	1221	1334	1790	

The Institute is also interested in how many students participated in undergraduate research for more than one semester. A QEP goal of over 70 percent of students who participate will do so for multiple terms. Statistical reporting tools for determining this will be developed during 2008. Students surveyed in the program reported 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.

Recruiting activities during AY06-07 included participation in the freshman orientation marketplace fair, information sessions held in the student center and in several GT1000 freshman orientation classes; participation in Presidential Scholar recruiting, Girls Night Out, and the College of Sciences. A personal letter from the Director of Undergraduate Research was sent along with a copy of the program's newsletter (see <http://undergradresearch.gatech.edu/news/>) to admitted freshman who indicated an interest in research on their application. During summer of 2007, freshman orientation activities were expanded to include speaking at two back-to-back session on undergraduate research.

ENROLL 20 STUDENTS IN THE RESEARCH THESIS OPTION

Much of 2006-07 was spent laying the foundation for the administration of the Research Option. Original participation goal for this year was reduced to 10 due to delays in starting this program in 2005-06. However, student participation has met or exceeded expectations during the first year with five graduates in Fall 2006, 14 graduates in Spring 2007, and an additional 38 students having indicated interest in the program with graduation

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.

dates ranging from Fall 2007 to Spring 2011. 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 second year of the program (refer to Assessment section of report for additional details related to student learning).

FALL RESEARCH JOB FAIRS

Two workshops were held in late August 2007 to provide information to students on the benefits and rewards of undergraduate research. Approximately 95 students attended. Additionally, the UROP office sponsored or co-sponsored four workshops for faculty and graduate students on topics relevant to assisting students in finding research opportunities as well as mentoring students in research projects. Over seventy, mostly graduate students, attended one specific mentoring workshop. College and school-level information sessions were held by the College of Computing and School of Electrical and Computer Engineering. Presentations were made to five sophomore-level management classes on undergraduate research during Spring 2007 and to the Presidential Scholars, among other groups.

SPRING RESEARCH SYMPOSIA

Twenty-three undergraduate students presented oral presentations and 43 presented posters at the Second Annual Institute-Wide Undergraduate Research Spring Symposium and Awards held at the College of Architecture on April 4, 2007. Forty-two faculty and graduate students from across campus served as judges for the event. The symposium was the culminating event to 11 workshops conducted throughout the academic year to develop and/or improve writing, research, and presentation skills for participating students. Prizes were awarded to 13 students for their work, and students participated from the College of Architecture, the College of Computing, the College of Engineering, the Ivan Allen College, and the College of Sciences. A formal reception and awards ceremony, planned by the Student Advisory Board for Undergraduate Research, was held at the conclusion of the event to recognize the student awardees from the symposium and an inaugural group of Outstanding Undergraduate Researchers chosen by the colleges. School-sponsored poster sessions were also held in several schools.

2007-08 UROP MILESTONES

- ENROLL 150 ADDITIONAL STUDENTS IN RESEARCH
- ENROLL 20 STUDENTS IN THE RESEARCH OPTION
- CONDUCT COLLEGE AND SCHOOL-LEVEL INFORMATION SESSIONS AND RESEARCH DAYS
- ENDOW INITIAL GROUP OF PRESIDENT'S UNDERGRADUATE RESEARCH AWARDS (PURA)

UNDERGRADUATE RESEARCH ADVISORY GROUP

Dr. Amy S. Bruckman, *Chair*, School of Interactive Computing, College of Computing
Dr. Kent Barefield, Dean's Office, College of Sciences
Dr. Amanda Gable, Director, Fellowship Communication Program
Dr. Cliff Henderson, Chemical and Biomolecular Engineering, College of Engineering
Dr. Jonathan Gordon, Director, Office of Assessment
Dr. Sabir Khan, Dean's Office, College of Architecture
Dr. Charles Parsons, College of Management
Dr. Jud Ready, Georgia Tech Research Institute
Ms. Subina Surendran, Senior, Biomedical Engineering, College of Engineering
Dr. Lisa Yaszek, School of Literature, Communication, and Culture, Ivan Allen College
Mr. Mark Youngblood, Senior, Electrical and Computing Engineering, College of Engineering

UROP STUDENT ADVISORY GROUP

Ms. Farhana Abdullah, Major: Science, Technology, and Culture
Mr. Arish Alreja, Major: Electrical and Computing Engineering
Mr. Steven Dalton, Majors: Computer Science and Physics
Mr. Robert Diamond, Major: Architecture
Ms. Angela Gill, Major: Biomedical Engineering
Mr. Justin Harper, Major: Management
Mr. Greg Leo, Major: Economics
Mr. Chris Luders, Major: Chemical and Biomolecular Engineering
Mr. Trevor McLeod, Major: Electrical and Computing Engineering
Ms. Cintia Nojima, Major: Chemical and Biomolecular Engineering
Ms. Ramya Parthasarathy, Major: Biomedical Engineering
Mr. Nirmal Patel, Major: Computer Science
Ms. Niki Pirouz, Major: Psychology
Mr. Ander Steele, Major: Mathematics

RESEARCH THESIS OPTION IMPLEMENTATION ADVISORY GROUP

College of Computing:	Dr. Amy Bruckman Ms. Kathy Earwood Mr. David White
College of Engineering:	Dr. Pradeep Agrawal Dr. Brent Carter Dr. Lakshmi Sankar Dr. Doug Williams
Ivan Allen College:	Dr. Mike Allen Dr. Lisa Yaszek
College of Sciences:	Dr. Ed Conrad Dr. Gregory Corso Dr. Dana Hartley Dr. Michael Loss Dr. Terry Snell Dr. Cam Tyson

UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM OFFICE:

Dr. Karen Harwell, Director
Ms. Fadrika Prather, Project Coordinator
Ms. Neela Balkissoon, Student Assistant

ASSESSMENT OF THE IP AND UROP

2006-07 MILESTONES AND IMPACT

DEVELOP INTERCULTURAL ASSIMILATION AND SENSITIVITY SKILLS [IP]

The Office of Assessment (OOA) selected the Intercultural Development Inventory (IDI), a standardized and psychometrically validated instrument designed to measure a person's orientation to cultural difference. This includes measuring the skills necessary to accept cultural difference, tolerate cultural ambiguity, and interact comfortably with persons in a difference cultural environment. Students will complete the instrument as freshmen and again as seniors. OOA will then compare three groups: students participating in the IP; students who study abroad but do not participate in the IP; and students who do not participate in either the IP or study abroad experiences. To date, baseline data has been collected from two freshmen cohorts—the incoming classes of 2005 and 2006 amounting to data from 2,748 students. IDI data will be collected from one more freshman class in Summer 2007 during FASET orientation sessions. Preliminary analysis of the data reveals no significant differences between students intending to pursue the IP and those who do not.

SECOND LANGUAGE PROFICIENCY [IP]

The ability to communicate in a second language is measured by the ACTFL⁶ proficiency test. The School of Modern Languages will collect data on proficiency levels after students have completed their required language courses, often after their international experience. Results of student language performance will be shared with the OOA as IP students progress through their curriculum and will be provided in subsequent annual reports.

COMPARATIVE GLOBAL KNOWLEDGE [IP]

OOA along with Professors Michelle Dion and Willie Belton (Schools of International Affairs and Economics respectively) began development of the “Test of Global Knowledge” to measure knowledge of concepts of international relations and global economics. A pilot version of the test was administered in selected courses in International Affairs and Economics this year. Professor Susan Embretson from the School of Psychology is utilizing item response theory techniques to validate the items and create a usable test-bank of questions. Once the instrument is properly validated in Summer 2007, OOA will administer the test to IP students and will also collect comparative performance data from other undergraduate students.

GLOBAL DISCIPLINARY PRACTICE [IP]

Students in the IP are expected to use cultural frames of reference and use alternative perspectives to think critically and solve problems within the context of their discipline. Students will be expected to manifest these skills in their capstone courses within their discipline. To date, several capstone courses have been designed and approved by the International Plan Committee to accommodate students who were “grandfathered” into the IP. These students have not been formally assessed for these skills. Instead, the OOA intends to study the larger cohorts of students who are working their way through the curriculum. Assessing global competence within the disciplines presents the greatest challenge in the overall assessment plan, because specific learning outcomes on a disciplinary basis have not been articulated, and the requirements for the capstone courses are in varying states of completion.

DEMONSTRATE GAINS [UROP AND RESEARCH OPTION]

A pre/post research experience evaluation has been created and piloted among recipients of the President's Undergraduate Research Awards (PURA). This instrument is designed to measure self-reported gains in research knowledge, skills, and abilities among PURA students in Summer and Fall 2006, and its use was expanded to

⁶ American Council on the Teaching of Foreign Languages

include all UROP participants in Spring 2007. In addition to these instruments, the Office of Assessment has created a survey for the research mentors to rate these same skills. Based on data collected in Summer and Fall 2006, a majority of both students and research mentors stated reported high levels of confidence in the ability to:

- Solve problems independently without supervision
- Synthesize and use information from diverse sources
- Think logically about complex material
- Approach problems creatively
- Possess clear career goals
- Adapt to rapidly changing technology
- Understand ethical implications of issues
- Maintain openness to new ideas

RUBRICS FOR THE UNDERGRADUATE RESEARCH THESIS [RESEARCH OPTION]

The OOA has also been working with several academic professionals across GT to develop a rubric for assessing the writing abilities of students completing research theses as part of the UROP program. In Spring 2007, a team of writing experts including Christina Bourgeois [Electrical and Computer Engineering (ECE)], Dr. Jeff Donnell (Mechanical Engineering), and Dr. Amanda Gable (Director of Fellowship Programs) collaborated with Jill Auerbach (ECE) to create a pilot version of a thesis rubric. This rubric will be tested by Dr. Karen Adams (Fellowship Programs) in Summer 2007.

FORMATIVE FEEDBACK TO UROP OFFICE [RESEARCH OPTION]

The OOA conducted two focus groups of students enrolled in LCC 4700-Writing an Undergraduate Thesis. The focus groups concentrated on the motivation of students to pursue the thesis option, logistics of writing the thesis and conducting research, and instructional support for the thesis writing course. Students in the focus groups felt the course served to hone their technical writing skills, and particularly appreciated the continuous revision component of their scientific writing (i.e. multiple drafts of their work).

2007-08 ASSESSMENT MILESTONES

- **DEVELOP INTERCULTURAL ASSIMILATION AND SENSITIVITY SKILLS [IP]**
Administer the IDI to a select group of students returning from semesters abroad in AY 07–08 to obtain further preliminary results.
- **DEMONSTRATE COMPARATIVE GLOBAL KNOWLEDGE [IP]**
Validate the Test of Global Knowledge and begin data collection using the instrument.
- **ASSESS ENGAGEMENT IN GLOBAL DISCIPLINARY PRACTICE [IP]**
Bring to campus an external consultant to assist GT faculty in designing appropriate assessment methods.
- **PREPARE STUDENTS FOR GRADUATE STUDY AND GRADUATE STUDY OPPORTUNITIES.
[RESEARCH OPTION]**
Data will be collected on senior exit, commencement, and alumni surveys and analyzed by the Office of Assessment. We expect to begin data collection in AY2007-08 and onward. Data will be reported when a sufficient sample size is achieved.
- **ASSESS GAINS IN SELECTED SKILLS AND ABILITIES [UROP]**
Pre-project and end-of-project questionnaires will continue to be utilized in forming a longitudinal sample of data related to gains in problem-solving, communication skills, knowledge of the discipline, and research competence. Data will be reported when a sufficient sample size is achieved. The faculty survey piloted with mentors from the President’s Undergraduate Research Awards (PURA) will be expanded to include faculty mentoring undergraduates who are listed as the instructor of record on research courses and repeated until a sufficient sample size is achieved.

OFFICE OF ASSESSMENT

Dr. Jonathan Gordon, Director, Office of Assessment
Dr. Joe Ludlum, Survey Research Coordinator
Mr. Shawn Carnley, Web Developer and Administrator
Ms. Sue Woolard, Office Administrative Coordinator
Ms. Courtney Buckner, Student Assistant
Mr. Matt Jacoby, Student Assistant
Ms. Hanisha Laungani, Student Assistant

TEST OF GLOBAL KNOWLEDGE DEVELOPMENT TEAM

Dr. Willie Belton, School of Economics
Dr. Michelle Dion, The Sam Nunn School of International Affairs
Dr. Susan Embretson, School of Psychology

ABOUT THE GEORGIA INSTITUTE OF TECHNOLOGY

Georgia Tech, home of the Yellow Jackets, is the No. 8 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 17,000 undergraduate and graduate students representing over 100 countries. The university is a national and international leader in scientific and technological research and education, receiving more than \$345 million in research awards in fiscal year 2006. During fiscal year 2006, Georgia Tech's Enterprise Innovation Institute (EII) completed nearly 900 projects and served nearly 2,100 companies. Assistance to companies led to more than \$865 million worth of increased sales or new contracts, and either created or saved nearly 16,000 jobs. Productivity improvement made by companies with help from EII produced operating cost reductions in excess of \$22 million. 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.



PRESIDENT G. WAYNE CLOUGH

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 provide 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.