

**YEAR ONE REPORT**

**October 1, 2001 through September 30, 2002**

**EXTERNAL EVALUATION OF ADVANCE PROGRAM  
GEORGIA INSTITUTE OF TECHNOLOGY  
ATLANTA, GEORGIA**

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Evaluation of ADVANCE Program at Georgia Institute of Technology

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**External Evaluation of ADVANCE Program  
Georgia Institute of Technology  
Atlanta, Georgia**

**Year One Report**

October 1, 2001 through September 30, 2002

**Introduction**

The ADVANCE Program at the Georgia Institute of Technology (Georgia Tech) was funded in 2001 by the National Science Foundation to develop and implement a model using an integrated approach to influencing organizational features and factors that shape outcomes for women in science and engineering. This model purports to reform central organizational features of the institution in order to achieve the project's main goal of increasing the full participation and advancement of women, particularly senior women, in academic science and engineering at Georgia Tech. Project objectives are summarized in the proposal as follows:

- 1) making and marking the advancement of women an organizational priority via leadership and action taken; 2) weaving women into the fabric of institutional structure and decision-making; 3) creating means for equitable distribution of resources; 4) assessing evaluation practices, and defining criteria for advancement that are clear and unbiased by gender; and 5) enhancing family-friendly practices.

**Goals of the External Evaluation**

As part of this project, Georgia Tech commissioned an external evaluation to document and assess the accomplishment of its main goal, to be measured in terms of increases in the recruitment, promotion, tenure, and retention rates of women faculty in science and engineering. The external evaluation, which will supplement an internal evaluation conducted by Georgia Tech, will draw from various data sources, including departmental and institutional data files and records that will be made available by the institution.

This report lays out the design of the external evaluation, presents baseline data against which data collected in years two through five will be compared, and describes the work to be performed as part of the external evaluation in year two of the project.

## Evaluation Design

The external evaluation focuses specifically on collecting summative evaluation data to measure the project's success in meeting the objectives set forth in Figure 1 below. This figure shows, by objective to be addressed in the external evaluation, the measures that will be used to determine the success of the project in meeting each objective, the indicators corresponding to each set of measures, the sources of data, and the time period for which these data will be collected.

During year one of the project, baseline data have been established for each of the measures for Objectives 1-4 (see the "Baseline Data" section of this report). In years two through five, data on indicators for each measure will be compared to baseline data as well as to data for the previous year in order to determine progress towards the stated objectives. For example, recruitment and retention rates for women in the sample will be compared to those for women in the baseline data and for the previous year to assess whether or not there has been an increase over the previous year and against the baseline data. In addition, these rates will be compared to those of men in a matched sample of males and, whenever possible, against all men in the four colleges included in the ADVANCE project.<sup>1</sup> For Objective 5, the external evaluation will report on yearly progress towards achieving a family-friendly environment according to the benchmarks outlined below.

While Objectives 1 through 5 are those that will be addressed directly by the external evaluation, the evaluators will also track and report on yearly progress towards revising other policies related to an additional set of objectives pursued by the project. Figure 2 lists these additional objectives (Objectives 6-9) together with related measures, indicators, data sources and time line for data collection. As described in the Georgia Tech report, data to address these objectives will be collected via surveys and interviews that will be designed and conducted by Georgia Tech staff as part of the internal evaluation. Institutional staff will also analyze the data and write up the analyses for the yearly report. External evaluation staff will, beginning in year two and contingent upon the timely receipt of these reports, discuss these findings in the yearly external evaluation reports.

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<sup>1</sup> For a description of the sample and other sources of data, please see the "Baseline Data" section.

**Figure 1: ADVANCE Project Objectives to be Addressed by the External Evaluation**

Objective No.	Objective	Measures	Indicators	Data Sources	Data Sources Provided by	Revised Time Period*
<b>Equity—Recruitment</b> *						
1.	Faculty recruitment patterns will reflect more gender equity	Recruitment patterns	By college, dept, rank: Faculty hired by gender and ethnicity	IRP data (based on departmental and institutional data files)	Office of Institutional Research and Planning (IRP)	7/00 – 6/01 7/01 – 6/02 yearly updates until 2006
<b>Promotion and Retention</b> *						
2.	Promotion and retention of senior women will rise	Promotion and retention information: <ul style="list-style-type: none"> <li>• job title (July to June)</li> <li>• faculty rank (July to June)</li> <li>• tenure status / ‘time in rank’ (as of Aug; valid until following March)</li> <li>• employee status (Spring)</li> </ul>	By college (N=4), dept (N=23), rank (N=3), and ethnicity (N=4): <ul style="list-style-type: none"> <li>• # and % women faculty</li> <li>• # and % women in tenure-track positions</li> <li>• # and % women in non-tenure-track positions</li> <li>• # and % women in administrative positions</li> <li>• # and % women in endowed/named chairs</li> <li>• tenure promotion outcomes</li> <li>• time in rank and time in institution</li> <li>• attrition</li> </ul>	IRP data (based on departmental and institutional data files)	IRP	7/00 – 6/01 7/01 – 6/02  yearly updates until 2006
3.	Senior women will gain greater representation in administrative hierarchy (Unit, College, Institute)	Representation of women in leadership positions	By college, dept, rank, and ethnicity: <ul style="list-style-type: none"> <li>• # and % women by job title</li> </ul>	IRP data (based on departmental and institutional data files)	IRP	7/00 – 6/01 7/01 – 6/02 yearly updates until 2006
		Committee Assignments / Administrative Posts	By college, dept, rank, and ethnicity: <ul style="list-style-type: none"> <li>• # and % women on promotion and tenure committees</li> </ul>	Reviews of Faculty Senate rosters, CVs, promotion packages, etc.	IRP	7/00 – 6/01 7/01 – 6/02 yearly updates until 2006

Objective No.	Objective	Measures	Indicators	Data Sources	Data Sources Provided by	Revised Time Period*
<b>Equity—Resources</b> *						
4.	Resource allocation will become more gender-equitable	Start-up packages	By college, dept, rank, and other controls: <ul style="list-style-type: none"> <li>• start-up packages by gender and ethnicity</li> <li>• years of probationary credit twds tenure</li> </ul>	Reviews of offer letters	IRP	7/00 – 6/01 7/01 – 6/02 yearly updates until 2006
		Space allocation	By college, dept, rank and years in rank: <ul style="list-style-type: none"> <li>• space allocation by gender and ethnicity</li> </ul>	Annual resources allocation data		
		Teaching loads	By college, dept, rank, and years in rank: <ul style="list-style-type: none"> <li>• # graduate students</li> <li>• # undergraduate students</li> <li>• # graduate hours</li> <li>• # undergraduate hours</li> </ul>	Curriculum inventory report		
		Research support	By college, dept, rank, and years in rank	GT Data Warehouse; Grants and Contracts Accounting System		
		Annual salary	By college, dept, rank, and years in rank: <ul style="list-style-type: none"> <li>• salary of faculty by gender and ethnicity</li> </ul>	IRP	IRP	7/00 – 6/01 7/01 – 6/02 yearly updates until 2006
<b>Family-Friendly Environment</b> *						
5.	A more family-friendly environment will be created	Adoption of new child-care policies	Year 1: state policy goals Years 2-6: report progress towards achievement of goals stated in Year 1	Policies and practices of Institute and University	ADVANCE Staff	2002-2006
Notes: * 2000-2001 and 2001-2002 are baseline years. Yearly updates will be provided between 2003 and 2006.						

**Figure 2: ADVANCE Project Objectives to be Addressed by Georgia Tech’s Internal Evaluation**

<i>Objective #</i>	<i>Objective</i>	<i>Indicators</i>	<i>Timeline</i>	<i>Data</i>	<i>Data Source</i>	<i>Time Period for Reporting</i>
6.	Women and senior women will express satisfaction with resources and working environment within the Unit, College and Institute	Self-reports of satisfaction with resources and working environment	Reporting will begin in 2003 after survey and interviews to be done in 2002 are completed	Initial surveys and interviews (in 2002); follow-up surveys at retreats (2003-2006)	ADVANCE Staff	2003-2006
7.	Processes of evaluation will become clearer	Clarity in experience as reported by faculty	Reporting will begin in 2003 after survey and interviews to be done in 2002 are completed	Initial surveys and interviews (in 2002); follow-up surveys at retreats (2003-2006)	ADVANCE Staff	2003-2006
		Materials used to disseminate information regarding evaluation processes; Dissemination techniques	Reporting will begin in 2003 after survey and interviews to be done in 2002 are completed	Institutional documents		
8.	Women’s access to colleagues and collaboration will increase	Faculty reports that colleagues are able and willing to collaborate	Reporting will begin in 2003 after survey and interviews to be done in 2002 are completed	Initial surveys and interviews (in 2002); follow-up surveys at retreats (2003-2006)	ADVANCE Staff	2003-2006
9.	Informal influence and support network of women will become more extensive	Faculty reports of influence of support network	Reporting will begin in 2003 after survey and interviews to be done in 2002 are completed	Initial surveys and interviews (in 2002); follow-up surveys at retreats (2003-2006)	ADVANCE Staff	2003-2006



## Methods

The evaluation will use a mixed-methods approach. While the external evaluation consists mainly of the collection (and analysis) of quantitative data to be supplied by the Institutional Research and Planning Office at Georgia Tech, documents and reports will also be reviewed (and supplemented by interviews, if necessary) to provide data on measures such as start-up packages and resource allocation. (The internal evaluation will use surveys as well as interviews and case studies.) The evaluation is also in the process of setting up a database in Microsoft Access to store and manage the yearly data updates. The data will then be analyzed using Microsoft Excel as well as SAS, a widely used statistical package.

## Reporting

The external evaluation report for year one will present baseline data only. In subsequent years (years two through five) the evaluation will report annual data for each year and will assess on a yearly basis the progress of the ADVANCE project towards meeting each of its Objectives 1 through 5. Each yearly report will also discuss the project's progress in meeting Objectives 6-9 addressed by the internal evaluation. Also, each yearly evaluation will report on the institution's progress in revising policies that support the attainment of project objectives.

The final external evaluation report will provide an analysis of the effect of the ADVANCE project over the five-year period. The report will aggregate the data collected over the five years of the project to assess its success in attaining each of the proposed objectives. (The assessment of Objectives 6-9 is, of course, contingent on the receipt of the analyses of the survey and interview data prepared by the internal evaluator.) The final report will also include a discussion of the implications of the evaluation findings for future institutional policy and practice.

## **Baseline Data**

### Data Sources

The analysis of baseline data is based upon three sets of data provided by the Office of Institutional Research and Planning (IRP) at Georgia Tech. The first data set contains aggregate statistics for the entire population of faculty (both men and women) at the four colleges included in the ADVANCE project, namely, Computing, Engineering, Ivan Allen, and Sciences.<sup>2</sup> The second data set contains recruitment information. These data include all faculty hired by Georgia Tech's four ADVANCE colleges in tenured or

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<sup>2</sup> These data were included in the spreadsheet labeled "FinalOutcomes.xls." While other data, based on the ADVANCE sample, were also included in this document, only the aggregate statistics were used in the present report.

tenure-track positions during the 2000-2001 and 2001-2002 academic years. They provided the basis for the analysis of recruitment at Georgia Tech. The third and last set of data contained the sample of female and male faculty for whom most of the data of interest to the evaluation are collected. This sample was drawn by Georgia Tech's IRP office by selecting *all* female faculty at the four participating colleges as of 2001, and then finding a suitable male match for each female faculty member. In 2002, newly-hired female faculty were added to the sample along with the corresponding male matches. Hence, these data should provide an accurate picture of women at Georgia Tech, and an appropriate male comparison group.

One caveat is warranted here. There are some inconsistencies in the baseline data reported, as we have pointed out via footnotes to the tables. Because we received the baseline data from Georgia Tech close to the deadline for submitting this report (and, consequently, had to delay submitting the report by one week), we were unable to clarify the inconsistencies as we encountered them because doing so would have delayed the report even further. Our first task in the next few weeks will be, therefore, to work with the IRP at Georgia Tech to reconcile the inconsistencies in the baseline data with the goal of producing a clean and accurate set of data to serve as the basis for comparison for data collected in years two through five. Furthermore, since some of the analysis is based upon a sample of faculty (which should include all women faculty and a set of matching male faculty), once the final sample is established, these analyses will be reproduced along with significance testing of the mean differences found. The introduction of significance testing will enhance the validity of the findings reported. For the purposes of the present analysis, however, one should note that the observations made in the following section should be taken with caution.

## Quantitative Analysis

### *Descriptive Statistics: Female Faculty at Georgia Tech*

As Table 1 shows, women represent a small percentage of faculty at Georgia Tech—specifically, 15% and 17% of all faculty in 2001 and 2002, respectively. These averages conceal quite a bit of variation, however. At Ivan Allen College, these figures are 35 and 38 percent, while at the College of Engineering female faculty represented 11% in 2001 and 13% in 2002. This variation is also evident within each college, with some departments boasting much higher rates of female faculty enrollment than others (e.g., 59% in Modern Languages in 2001 versus 20% in Economics in the same year).

A review of the ethnicity distribution of female faculty at Georgia Tech reveals that the great majority of faculty are white, with a small number of Asian/Pacific Islanders, a smaller number of Blacks and probably just a few Hispanics (out of the available sample, only one faculty was Hispanic).

The overwhelming majority of female faculty at Georgia Tech's four ADVANCE colleges are in some type of academic professor post, an analysis of job titles shows (see Table 2). Female faculty tend to be assistant or associate professors, with a small number having full professor posts. Only a few women faculty are either Head/Chair Academic or Dean Academic.

*Analysis by ADVANCE Objective:*

Objective 1: Equitable Faculty Recruitment Patterns

A review of faculty hired in tenured or tenure-track positions in the last two academic years, 2000-2001 and 2001-2002, shows that women tend to be hired at the assistant or associate professor rank (see Tables 3a and 3b). In the past two years, no women faculty were hired at the professor or chair ranks. There is a notable increase in the percentage of women hired in 2002 from that hired in 2001.<sup>3</sup> Overall, almost 21% of all new hires in 2002 were women, versus 12% in 2001. Looking at these figures by college shows that the size of this difference varies greatly by college and by department.

Objective 2: Promotion and Retention of Women

The above remarks regarding faculty recruitment patterns are confirmed by an analysis of data from the ADVANCE sample. As Table 4a shows, the majority of women hired at Georgia Tech received a rank of assistant professor (about 72%) upon hire, while a smaller percentage of women was hired at the associate professor (about 21%) or full professor level (7%). As of August 2002, however, this sample of faculty displays a significantly different distribution, with about 33% of female faculty as assistant professors, 41% as associate professors, and 26% as full professors. This suggests that women do progress up the promotion ladder. This progression is, however, somewhat slower for women than for men. Data on the average number of years faculty have spent in each rank reveal that women assistant professors do tend to hold that rank for slightly longer than men at all colleges except Ivan Allen. Conclusions regarding the other ranks—associate professor and professor—depend upon the college (see Table 4b).

Similarly, a review of data on tenure status (and these data apply to the entire population of faculty at the four Georgia Tech colleges participating in ADVANCE) shows that women are more likely to be in non-tenured positions than men and, conversely, less likely to be in tenured or tenure-track positions (see Table 5). For example, in the College of Computing, in 2001, 63% of all women faculty are tenured or tenure track, while 69% of men faculty are in this same category. The only exception to this pattern was Ivan Allen College, but only in 2001.

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<sup>3</sup> Except in the College of Sciences.

Data on promotion and tenure outcomes also provide useful information (see Table 6). In 2001, about 13% of all faculty considered for promotion were women, and 12% of all faculty recommended for promotion were women. Since women faculty in 2001 represented 15% of all faculty, these figures are encouraging. Moreover, 25% of all faculty considered for tenure in 2001 were women, while 21% of all faculty granted tenure that year were women. Both of these figures exceed the overall percentage of women at Georgia Tech in that year. This holds true for 2002 as well.

The last component of the analysis of promotion and retention of women focuses on the attrition rate. In 2001, women had a higher rate of attrition (almost 4%) than did men (1%). By 2002, however, this difference narrowed substantially as a result of a drop in the rate of women (to 1.7%) and a rise in that of men (to about 2%). These overall rates do conceal quite a bit of variation by college, particularly in 2001. In addition, one should note that in terms of absolute numbers, more men leave Georgia Tech than women. But since there are fewer women at Georgia Tech than men, a small number of women can have a greater impact on the size of the attrition rate, as reflected by the data shown in Table 7.

### Objective 3: Greater Representation of Women in Leadership Positions

To investigate the extent to which women were represented in leadership positions at Georgia Tech, data on faculty holding endowed chairs and professorships as well as faculty participation on promotion and tenure committees were analyzed. Table 8 shows that in 2001 women held no chair positions but held some professorships (14% of all professorships in Engineering and 50% in Sciences). By 2002, women held some chairs and a few more professorships. As a result, by 2002, 40% of all professorships and chairs in Computing and at Ivan Allen were held by women, while in Engineering and Sciences the comparable statistics rose to 7% and 14%, respectively. Data on women's participation in promotion and tenure committees show that, at present, as many as 25% of committee posts are held by women (Computing). Although this figure may be as low as 13% (Engineering), a comparison of current participation rates against the cumulative participation rates of the past five years suggests that there is an upward trend, with greater number of women participating in promotion and tenure committees over time.

### Objective 4: Equitable Allocation of Resources

The last major objective of the ADVANCE project (that may be analyzed quantitatively) is to move towards an equitable allocation of resources among Georgia Tech faculty. To establish a baseline snapshot of the current allocation of resources, evaluators requested data regarding start-up packages, compensation (salaries), research support, space allocation, and workload. Data were unavailable this year regarding start-up packages and space allocation, hence these are excluded from the present analysis. Data on research support, while submitted by Georgia Tech, did not seem to capture the

types of support that evaluators thought would accurately represent Georgia Tech's (versus external) contribution to faculty research. Evaluators will work with IRP at Georgia Tech to obtain a variant of these data for inclusion in next year's report. Data on all other measures were available and conclusions based on their analysis follow.

A review of average salaries for professors of different ranks reveals that at the assistant professor rank, women tend to earn less than men, although the difference in earnings is small (see Table 10). This is also true among associate professors, but in this group the male/female earnings differential widens. (There is one notable exception here; in the college of computing, female faculty have substantially higher average earnings than men faculty.) Among full professors, the picture is more complex. While in Ivan Allen College, women appear to earn much less than men (\$4554 and \$5143 difference in average earnings in 2001 and 2002 respectively), the opposite is true in the College of Sciences where women earn slightly more than men (\$2213 and \$671 difference in average earnings in 2001 and 2002 respectively). Based on the available sample of Georgia Tech faculty, no conclusions may be drawn regarding salaries of professors in the College of Computing (there is only one female faculty member in the sample and one male match who is not in the same department).

To assess the average workload of male versus female faculty, evaluators analyzed data on faculty work with graduate and undergraduate students, looking at both average number of students served and average number of hours spent working with students (see Tables 12 a-d).

The analysis shows that on average, in all four colleges, female *assistant professors* tended to work with more graduate students for a greater number of hours than did their male counterparts. This was the case in 2001. By 2002, however, the opposite was true. Among *associate professors* and *professors* the picture is more complicated. Relationships vary by college and year, and yield no clearly discernable patterns across all departments. For example, women associate professors in Engineering seemed to work with a lower average number of graduate students (and for less average number of hours) than did men professors, both in 2001 and 2002. The opposite is true among associate professors in the College of Computing. Among professors, women in Ivan Allen appear, on average, to work with more graduate students (and for more hours) than their male counterparts; the opposite is true in the Sciences.

The data on undergraduate students revealed a clearer picture (see Tables 12c-d). Across all ranks, women faculty in Computing and Sciences tended to work with fewer students and for fewer hours, on average, than did their male counterparts. On the contrary, men faculty in Engineering generally worked with fewer undergraduate students and for less time (on average), with the exception of assistant professors in 2001.

## Policies

The project expressly stated as an objective the enactment of family-friendly policies and developed sub-objectives for achieving it. These are:

- a) Development of a paid childbearing leave that does not exploit sick leave;
- b) Modification of the Georgia University System policy to increase the flexibility in the use of its tenure-clock extension policy;
- c) Modification of family leave policies to enhance opportunities for women's and men's leave after the birth of a child;
- d) Provisions for adequately addressing daycare needs in a new facility;
- e) Enhancement of the existing telecommuting policy;
- f) Addition of family care and lactation facilities throughout campus.<sup>4</sup>

Although no other policies were singled out for revision, the evaluation will monitor progress towards revising the following types of policies that could be supportive of project objectives:

- Faculty recruitment and hiring policies
- Policies to include more women in the decision-making and power structure of the institution
- Policies on resource allocation
- Policies on evaluation and advancement of faculty

## **External Evaluation Plans for Year Two**

### Data to be collected in year two

The external evaluation for year two will involve the a) collection (by the IRP Office at Georgia Tech) and analysis of departmental and institutional data on the recruitment, promotion, and retention of women faculty and their matched male counterparts; b) review<sup>5</sup> of institutional records (by the IRP Office at Georgia Tech) and analysis of the review to determine changes in the representation of women faculty in the administrative hierarchy; c) reviews of offer letters<sup>6</sup> (by the IRP Office at Georgia Tech)

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<sup>4</sup> In addition there should be an understanding that the leave and tenure policies should support a range of family responsibilities, including elder care.

<sup>5</sup> To be supplemented by interviews with department chairs, if necessary.

<sup>6</sup> To be supplemented by interviews with unit business managers, if necessary.

and analysis of the reviews to assess the extent to which resource allocation has become more gender-equitable; d) study of changes in childcare and other policies related to family-friendly issues to determine progress made towards creating a more family-friendly environment; and e) review of changes in other relevant policies to identify those that support the objectives of the project. Additional work will include a review of the analyses of surveys and interviews collected as part of the internal evaluation to determine progress towards fulfillment of the objectives outlined in Figure 2 above.<sup>7</sup>

#### Findings to be reported in year two

Findings will be reported for Objectives 1-5 in terms of progress towards the attainment of objectives as reflected in indicator data (see Figure 1). We will compare all statistics against those reported herein as baseline data. We will also comment and discuss the findings reported by the internal evaluators for Objectives 6-9.

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<sup>7</sup> This review will be contingent upon timely receipt of relevant analyses of these data from the internal evaluators.

**APPENDIX**

**(Tables 1 – 12)**

**EXTERNAL EVALUATION OF ADVANCE PROGRAM  
GEORGIA INSTITUTE OF TECHNOLOGY  
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