UNIVERSITY OF FLORIDA

Measuring University Performance: The Ph.D.

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Graduate education represents one of the primary missions of the University of Florida, and the production of master's degree and doctoral degree graduates represents one of the key contributions a major research university makes to its state. While the undergraduate program creates the foundation for a prosperous economy and the environment for developing high-income business and industry, the graduate program delivers highly trained individuals with higher earning power and more advanced skills. In measuring the performance of the University of Florida, it becomes clear that we must expand our already successful graduate program if we are to meet Florida' needs and fulfill our mission.

AAU Public University	Ph.D. as percent of all College Degrees (1995)
Berkeley	9.18%
Minnesota	8.62%
Wisconsin	8.57%
Illinois	7.37%
Purdue	7.32%
Michigan	7.08%
Iowa	6.96%
Maryland	6.95%
UCLA	6.94%
Texas	6.62%
Ohio State	6.51%
Nebraska	6.49%
UC San Diego	6.48%
North Carolina	6.27%
Virginia	6.06%
Rutgers	6.03%
SUNY, Buffalo	5.93%
Arizona	5.79%
Iowa State	5.77%
Michigan State	5.53%
Washington	5.51%
Penn State	5.45%
Colorado	5.42%
Missouri	5.17%
Pittsburgh	5.16%
Indiana	5.12%
Kansas	4.85%
UC Irvine	4.84%
Oregon	4.81%
Florida	4.77%
UC Santa Barbara	4.48%

Among the major public research universities in the United States (those belonging to the Association of American Universities), the University of Florida ranks below the median in total production of Ph.D.'s and especially low when we compare the ratio of Ph.D. degrees to bachelor degrees. While our undergraduate program is strong and effective, it does not enjoy the benefit of an appropriately sized master's and doctoral program. As the table indicates, our percentage of Ph.D.'s relative to all degrees ranks next to last among AAU public universities. Another measure, not displayed here, shows that while Florida is the third largest state, among AAU public universities we rank only 14th in the total production of Ph.D.'s

This institutional profile is even more unusual when we consider the exceptional performance of the University of Florida's research enterprise. Our research program has grown remarkably in the past decade as indicated by the increasing volume of research grants and contracts and the continued high performance of the university's research commercialization efforts in patents and licenses. Clearly, with a research enterprise this successful, the University of Florida is an ideal place for the development of graduate students, and we need to expand our graduate programs to take full advantage of the research base already established here.

Not surprisingly, our current profile of Ph.D. recipients indicates a heavy preponderance in the sciences, agriculture, and especially in engineering--traditionally strong areas for the University of Florida. At the same time, we have exceptional programs in other program areas that now produce a smaller number of master's and Ph.D. recipients.

Advanced education benefits individuals and their communities. At the most basic level, our students who receive graduate degrees have exceptional employment histories and end up in jobs with good salaries that required advanced study. We

College (1995-96)	# Ph.D. degrees
Engineering	90
Liberal Arts and Sciences: Natural & Mathematical	62
IFAS	60
Medicine	47
Education	46
Liberal Arts and Sciences: Social Science	46
Liberal Arts and Sciences: Humanities	18
Business	16
Health Professions	10
Pharmacy	9
Journalism	7
Nursing	7
Vet Med	7
Architecture	4
Hlth & Human Perf	3
Fine Arts	2

commissioned a survey of the advanced degree recipients from the 1990-92 classes to get a sense of the marketplace for recently graduated advanced degree holders from the University of Florida in all fields, including those in science and engineering. We chose the 1990-92 classes to be sure we reported graduates' employment success after their first position. Many graduates in scientific fields, for example, work for several years in post-doctoral positions before moving on to permanent careers. More than 96% of these graduates have good jobs with good incomes, and almost all of our graduates have positions that make use of their advanced academic degree skills. Our Ph.D. graduates pursue careers in education at universities and community colleges, in business and industry, and in other government or non-university research positions.

Ranking	Average Pay ($)	Estimated Difference from Mean due to Percent of Graduate Degrees
Top Eleven: Massachusetts, Connecticut, Illinois, Maryland, New York, Missouri, Arizona, New Mexico, Louisiana, Colorado, California.	$27,463 to $26,765	$3,668 to $467
Mean: United States	$24,106	$0
Bottom Eleven: **Florida**, South Dakota, Rhode Island, Iowa, Utah, Alabama, Montana, Wyoming, Idaho, North Dakota, Maine	$20,877 to $16,980	-$2,225 to -$4,279

In the design for Florida's future as a state capable of attracting high-technology, high-value business and industry, the availability of graduate degree holders is a critical element along with appropriate tax policies, good transportation and communication facilities, and a generally well-educated workforce. Whether we look at California, Massachusetts, Ohio, Michigan, or Texas—all states with dynamic high-technology industries and business--we find that quality firms go where they can get high quality, highly trained employees. It is essential to continue to improve the number of college graduates in Florida's workforce, but it is just as important to expand the state's graduate degree population as well.

We rank only 41st in the country in terms of our production of Ph.D.'s relative to all college degrees. This translates, in economic terms, to lost income to Floridians that averages out at more than $2,200 per year per person. This is lost income attributable to our low ranking in Ph.D. production. Additional income differences may result from lower cost of living and lower wage rates because Florida is about $3,000 per person per year below the U.S. norm.

At the University of Florida we effectively manage, support, evaluate, and improve undergraduate education. We now turn to our college's graduate education programs to improve their performance and increase their productivity. Recognizing the tremendous importance of graduate education at the master's and Ph.D. levels, the Graduate School has led a comprehensive, university-wide discussion about improving and enhancing our graduate education. The result of this work is a series of reports and plans that describe our strategy for the continued expansion and development of graduate education at the University of Florida.

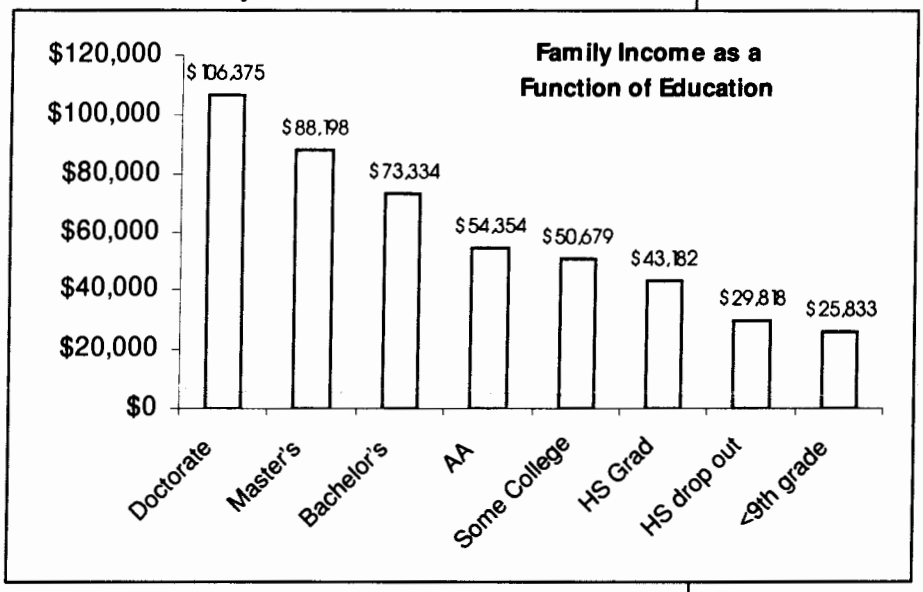
The deans of the various colleges also have developed plans for how we can expand our graduate programs in areas of high student demand and good employment prospects. The University of Florida can responsibly increase by 500 graduate student FTE in the 1998-99 academic year with legislative support for enrollment growth funding.

Most students who begin graduate programs at the university succeed. We need to increase graduate student access to all fields where we have capacity and demand. We also need to carefully monitor the progress of our graduate students to lower their

investment in a graduate degree and at the same time, increase our productivity in delivering those degrees.

As we expand the number of graduate students at the University of Florida to meet the needs of the state and better fulfill our mission, we also must critically evaluate each college's advanced degree programs. Because each master's and doctoral program has different requirements to meet the expectations of employers in different fields, it is more difficult to collect and analyze data on the average productivity of advanced degree programs. Nonetheless, some preliminary data offer a profile and indicate where detailed analysis of transcripts could improve our understanding.

Graduate students, particularly Ph.D. students, often attend the university at less than full-time status.



They frequently have jobs and pursue a graduate education in the evenings and summers, they may work at the university as research assistants or teaching assistants or at a community college or school system as part- time instructors, or they may have part-time jobs in the private sector. We expect our graduate students to work on research projects and participate in the instructional program as part of their training. Consequently, most data on time to degree for graduate students are meaningless. Some students move through the system quickly because they have the good fortune of full fellowships that permit full-time study. Other students work on their degrees one or two courses a semester for years until achieving their goal.

Preliminary aggregate data indicate that if a student took a full load for 12 months (12 credit hours per semester and 8 credit hours in the summer), our Ph.D. graduates on a full-time basis could complete their work in about four years. Many of our Ph.D. students enter their doctoral programs after completing a master's degree either here at the University of Florida, or elsewhere. If we count from the time students enter the Ph.D. program, leaving aside what other educational experiences they may have had, full-time students would complete the doctoral program at the University of Florida in about three years.

Real-life students take much longer, of course, because so few of them can pursue advanced study on a full-time basis. Again, considering the difficulty of interpreting aggregate data, our students actually take about five years from the time they enter the doctoral program to complete their degrees. This means that they take, on average, about eight credit hours each semester and summer from the time they enter the Ph.D. program.

These students demonstrate a significant commitment to their programs. Graduate students, and particularly Ph.D. students, make a significant sacrifice to pursue advanced degrees. Consequently, most of them finish their degree programs and earn their degrees. We lose only 20% of the master's and Ph.D. students who enroll. Further analysis of individual transcripts will help us understand the relationship between course work and dissertation and independent study so we can better support our students' progress toward advanced degrees. Even with the data at hand, however, it is clear that the graduate program at the University of Florida is successful and effective.

Access to graduate education is a high priority in Florida if we are to succeed as a dynamic, prosperous, and competitive state. Expansion of graduate enrollment will achieve this goal, and the University of Florida will continue to assemble the resources and talent needed to attract the best students and help them complete their advanced degrees as quickly and effectively as possible.

Survey data for this report came from:

Survey by *Florida Survey Research Center,* Mike Schicchitano, director [1997 survey included all Ph.D. graduates from 1990-92 in Science, Social Science and Engineering].
Analysis of *Economic Benefits of Graduate Programs,* prepared by Lawrence Kenny and Dick Scoggins of the Bureau of Business and Economic Research, University of Florida, 1997.

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MEASURING UNIVERSITY PERFORMANCE: THE SERIES

The University of Florida series, *Measuring University Performance*, will take up additional topics reflecting the university's commitment to measuring university performance in quality and productivity of research, teaching, extension, and service.

All of us at the University of Florida welcome comments and suggestions prompted by this series. Please write to the Office of Institutional Research, PO Box 118140, University of Florida, Gainesville, FL 32611-8140 (ufdata@nervm.nerdc.ufl.edu).