

## **Success in Educating Young Physicists and Science Teachers**

The Department of Physics and Astronomy at Ball State University has a long history of success in graduating scientists and science teachers at both the bachelors and masters level. This success is due in large measure to the combination of a small program environment combined with a diverse faculty with broad experience in teaching physics, astronomy and physical science to a broad spectrum of students.

The vast majority of physics programs are small in size. About two thirds are small liberal arts programs offering only bachelor's degrees in physics. Most of these have only a few faculty members representing a limited number of areas of physics specialization.

About 25% of the programs are large, offering bachelor's, master's and doctoral degrees in physics. Such programs have broad diversity, but undergraduate courses in such programs tend to be very large and most of the emphasis is on the graduate students.

Institutions like ours, with combined programs at the bachelor's and master's levels, comprise only 8% of the institutions granting bachelor's degrees in physics. Our program provides individual attention to both undergraduate and graduate students. Broad faculty involvement in service courses for non-science majors permits a much larger and more diverse faculty than is possible in most physics departments and ensures faculty members who are excellent teachers. The significant success achieved by our department has been documented by the reports of the American Institute of Physics, the most recent of which is summarized below.

### **American Institute of Physics Data**

The American Institute of Physics collects data about degrees awarded in physics each year. The following information was taken from the Physics Undergraduate and Graduate Enrollment and Degree reports presented in January, 2010. These reports show that the department of Physics and Astronomy at Ball State is among the most successful non-Ph. D. granting departments in graduating students with bachelor's and master's degrees. The links to the two full reports are provided below.

## Bachelor's Degrees in Physics

There were 574 physics departments granting bachelor's and or master's degrees in physics for students in the class of 2007. (This does not include departments which grant Ph. D. degrees as their highest degree.) The median number of bachelor's degrees awarded was 4 for departments awarding bachelor's degrees as their highest degree in physics. The median number of bachelor's degrees awarded was 5 for departments awarding master's degrees as their highest degree in physics. Ball State graduated an average of 10 physics majors per year over the three year period 2005-2007. Based on rankings for schools that submitted data for all three years, that is at the 90<sup>th</sup> percentile for the group of 574 schools noted above. For schools granting master's degrees as their highest degree, Ball State was ranked at the 89<sup>th</sup> percentile. The table below shows the top producers of bachelor's degrees for departments awarding the master's degree in physics as their highest degree in physics.

**Table 6**

<b>Master's-granting* departments averaging 7 or more physics bachelor's degrees per year, classes 2005 through 2007.</b>			
	Annual Average		Annual Average
Miami U (OH)	15	San Jose State U (CA)	9
Appalachian State U (NC)	13	Stephen F Austin State U (TX)	9
California State U, Northridge	13	Virginia Commonwealth U	9
U of Puerto Rico, Mayaguez	12	Missouri State U	8
Northern Arizona U	11	San Diego State U (CA)	8
Ball State U (IN)	10	Eastern Michigan U	7
SUNY-Binghamton U (NY)	10	Indiana U of Pennsylvania	7
U of Central Oklahoma	10	Western Illinois U	7

Note: List includes only those departments who contributed degree data for all 3 years.

\* Departments offering a master's as their highest physics degree.

<http://www.aip.org/statistics>

<http://www.aip.org/statistics/trends/reports/EDphysund07.pdf>

## Master's Degrees in Physics

There were 64 physics departments granting master's degrees in physics as their highest degree for the academic year 2006-2007. Based on rankings for those schools submitting data for all three years, Ball State ranked **Number One** in this group with an average of 10 master's degrees awarded each year between 2005-2007. The table below shows the top producers of master's degrees for departments awarding the master's degree in physics as their highest degree in physics.

Table 3

Master's-granting\* departments averaging 5 or more physics master's degrees per year, classes 2005 through 2007.

	<u>Annual Average</u>
Ball State U (IN)	10
Miami U (OH)	8
U of Louisville (KY)	8
Cleveland State U (OH)	7
San Diego State U (CA)	7
Christopher Newport U (VA)	6
Fisk U (TN)	6
U of Mass, Boston	6
U of Mass, Dartmouth	6
U of Puerto Rico, Mayaguez	6
Appalachian State U (NC)	5
CA State U, Fullerton	5
City College (NY)	5
Northern Arizona U	5
U of Louisiana, Lafayette	5

List includes only those departments who contributed degree data for all 3 years.

\* Departments offering a master's as their highest physics degree.

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<http://www.aip.org/statistics/trends/reports/EDphysgrad07.pdf>