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# Astronomy Enrollments and Degrees

**Results from the 2009 & 2010 Surveys of Physics & Astronomy Enrollments and Degrees**

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***REPORTS ON ENROLLMENTS AND DEGREES***

**Astronomy Enrollments and Degrees (December 2011)**

Physics Enrollments (*forthcoming*)

Physics Undergraduate Degrees (*forthcoming*)

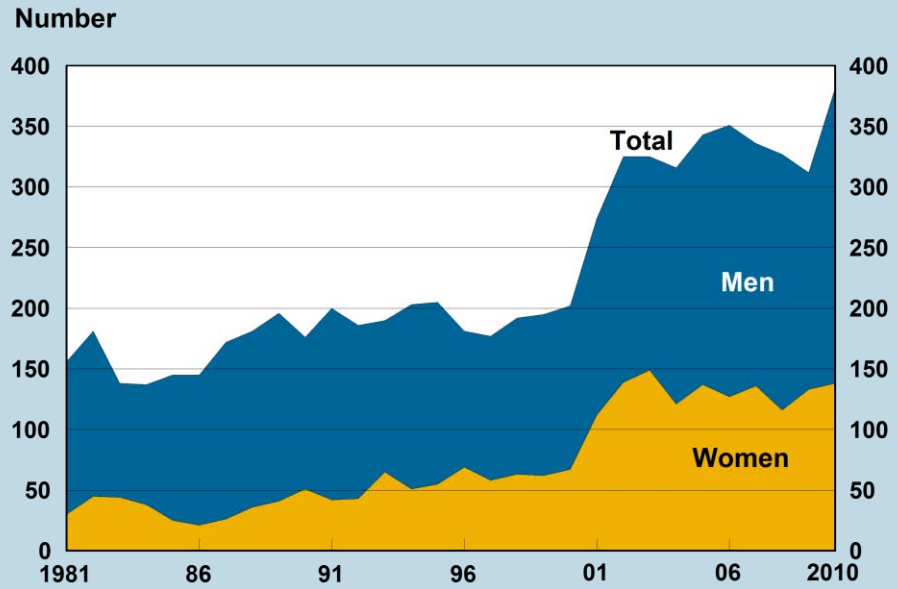
Physics Graduate Degrees (*forthcoming*)

The academic year 2009-10 has hit a number of all-time highs concerning astronomy education. New highs were reached in the areas of introductory astronomy course enrollments, senior-level astronomy majors, total number of astronomy graduate students and astronomy bachelor's degrees conferred. In 2010, 382 bachelor's were awarded with 36% (N=138) earned by women.

***The number of astronomy bachelor's degrees awarded is at an all-time high.***

## Figure 1

**Astronomy Bachelor's Degrees Awarded by Gender, Classes 1981 through 2010.**

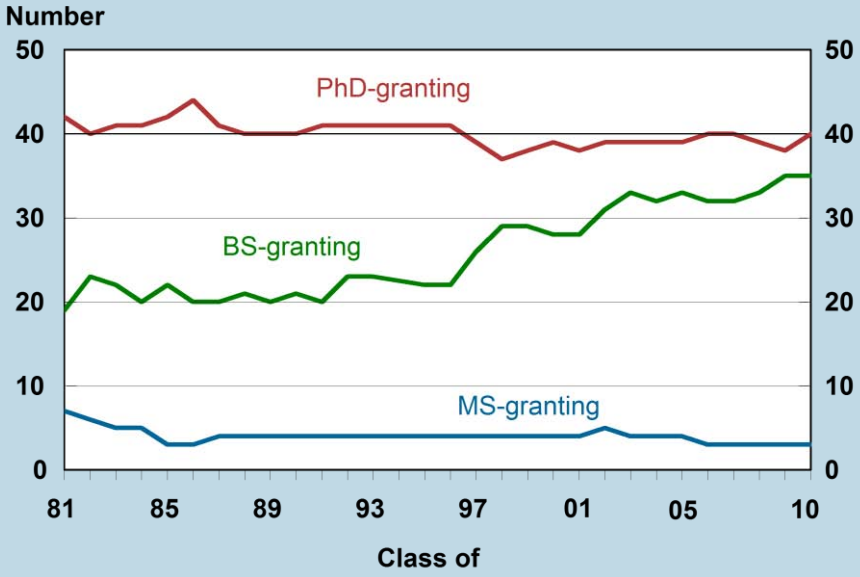



## THE 2009 & 2010 SURVEYS OF ENROLLMENTS AND DEGREES

Each year, degree-granting astronomy departments are contacted in the fall and asked to provide their departmental counts of current enrollments and degrees conferred.

## Figure 2

**Number of Departments Offering an Astronomy Degree by Highest Astronomy Degree Offered, Classes 1981 through 2010.**

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*The increase in the number of astronomy departments offering the bachelor's as their highest degree is mostly attributable to existing physics departments adding an astronomy major.*

## Table 1

**Introductory Astronomy Course Enrollments by Type of Department, Academic Year 2009-10.**

| Highest Degree Offered | Depts. Offering Physics Degrees Only | Depts. Offering Astronomy Degrees |
|---|---|---|
| Bachelor's | 54,000 | 12,000 |
| Master's | 25,000 | 2,000 |
| PhD | 61,000 | 37,000 |
| **Total** | **140,000** | **51,000** |

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*Introductory astronomy course enrollments reached an all-time high for the 2009-10 academic year.*

The number of students taking an introductory astronomy course reached an all-time high in the 2009-10 academic year, making it the first year that enrollments have surpassed 190,000.

The national average for all astronomy departments is five bachelor's degrees per year. Of the 35 departments where the bachelor's was the highest astronomy degree offered, only 5 averaged 5 or more bachelor's a year for the classes of 2008, 2009 and 2010. For the 31 PhD-granting astronomy departments that have an undergraduate program, over half of those departments averaged 7 or more astronomy bachelor's a year.

## Table 2

**Bachelor's-Only Departments Averaging 5 or More Astronomy Bachelor's Degrees per Year, Classes 2008, 2009 and 2010.**

| | Annual Average |
|---|---|
| U of Hawaii, Hilo | 10 |
| Northern Arizona U | 9 |
| U of Rochester (NY) | 6 |
| Whitman Coll (WA) | 5 |
| Williams Coll (MA) | 5 |

**Note: List includes only those departments that contributed degree data for all three years.**

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***Of the 35 departments where the bachelor's was the highest astronomy degree offered, only 5 averaged 5 or more bachelor's a year.***

## Table 3

**PhD-Granting Departments Averaging 7 or More Astronomy Bachelor's Degrees per Year, Classes 2008, 2009 and 2010.**

| | Annual Average | | Annual Average |
|---|---|---|---|
| U of California, Berkeley | 27 | U of Texas, Austin | 10 |
| U of Colorado, Boulder | 18 | U of Illinois, Urbana | 8 |
| U of Washington | 16 | U of Mass, Amherst | 8 |
| Florida Inst of Technology | 12 | U of Minnesota | 8 |
| Michigan State U | 12 | Columbia U (NY) | 7 |
| U of Wisconsin, Madison | 11 | Ohio State U | 7 |
| Boston U (MA) | 10 | U of Arizona | 7 |
| Pennsylvania State U | 10 | U of Virginia | 7 |
| U of Maryland, College Park | 10 | | |

***The 17 departments listed in Table 3 were responsible for producing 55% of all astronomy bachelor's in the combined classes of 2008, 2009 and 2010.***

**Note: List includes only those departments that contributed degree data for all three years.**

**Nine of the 40 PhD-granting astronomy departments do not offer a bachelor's degree.**

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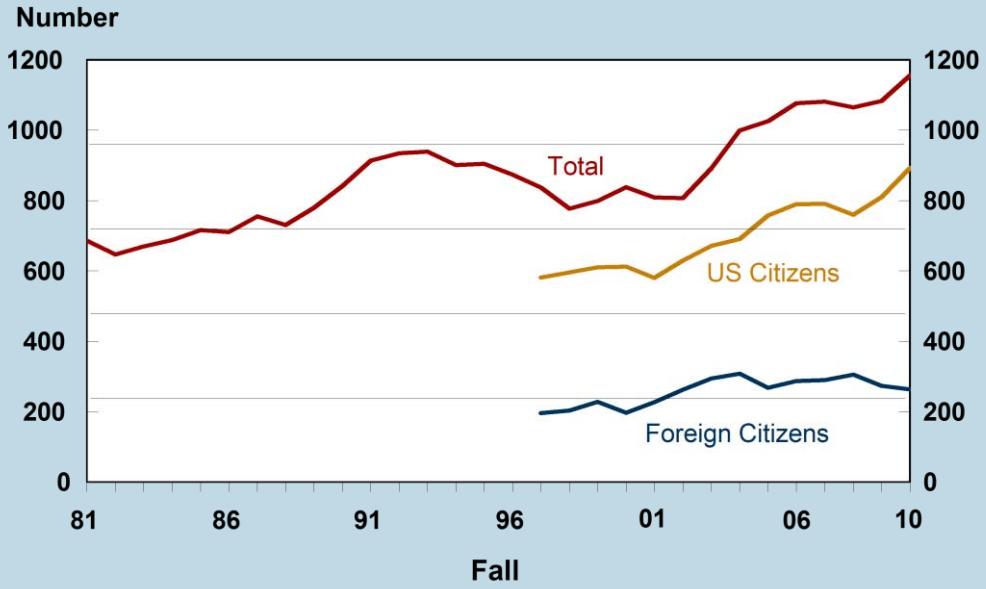
Astronomy graduate student enrollments in the US have been steadily rising over the years and reached an all-time high of 1,156 during the fall of 2010. The rise in astronomy graduate student enrollments reflects increases that occurred in the number of incoming students in years past.

## Figure 3

**Total Graduate Astronomy Student Enrollments by Citizenship, Fall 1981 through Fall 2010.**

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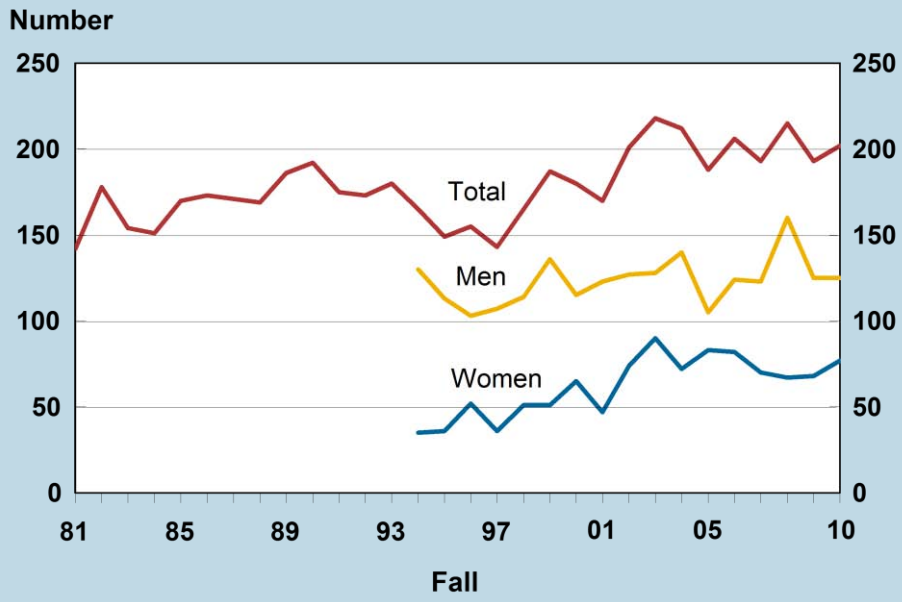
***Astronomy graduate student enrollments in the US were at their highest level during the fall of 2010.***

## Figure 4

**First-Year Graduate Astronomy Student Enrollments by Gender, Fall 1981 through Fall 2010.**

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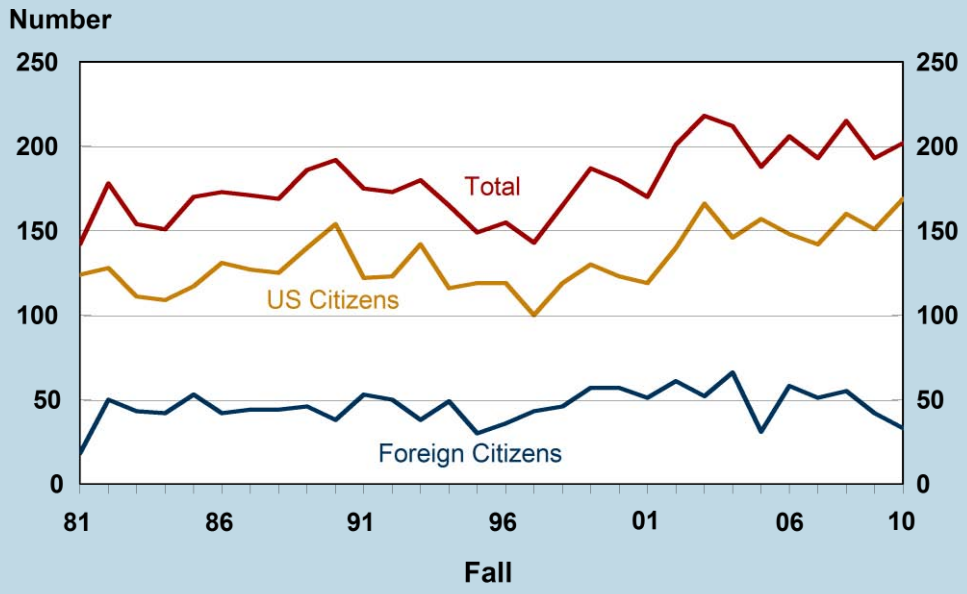
***Women are better represented among first-year astronomy students than in physics.***

Women have a better representation among astronomy first-year students than in physics. Women made up 38% of incoming astronomy graduate students in the fall of 2010 compared to 21% for physics.

First-year graduate student enrollments at astronomy departments continue to remain at around 200 students annually. The proportion of these incoming students that are US citizens has also remained steady at around 75%.

## Figure 5

**First-Year Graduate Astronomy Student Enrollments by Citizenship, Fall 1981 through Fall 2010.**

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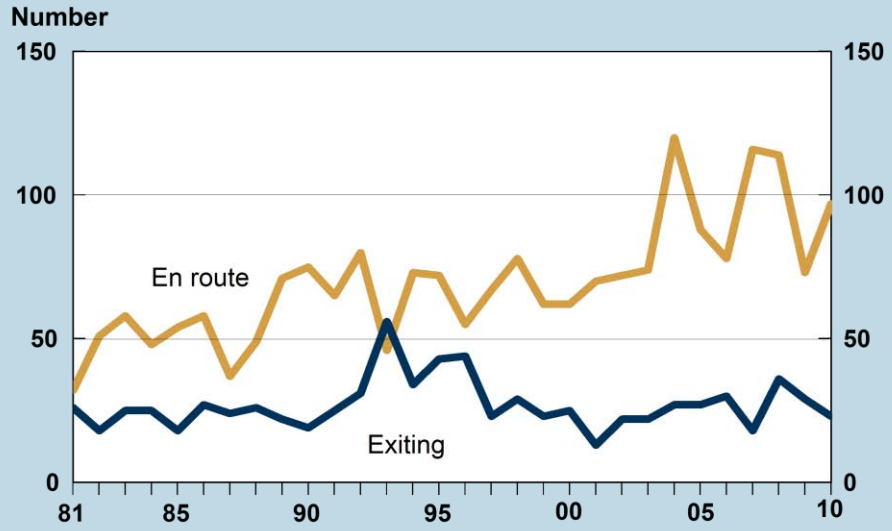
***First-year graduate student enrollments have remained virtually unchanged for the last nine years.***

## Figure 6



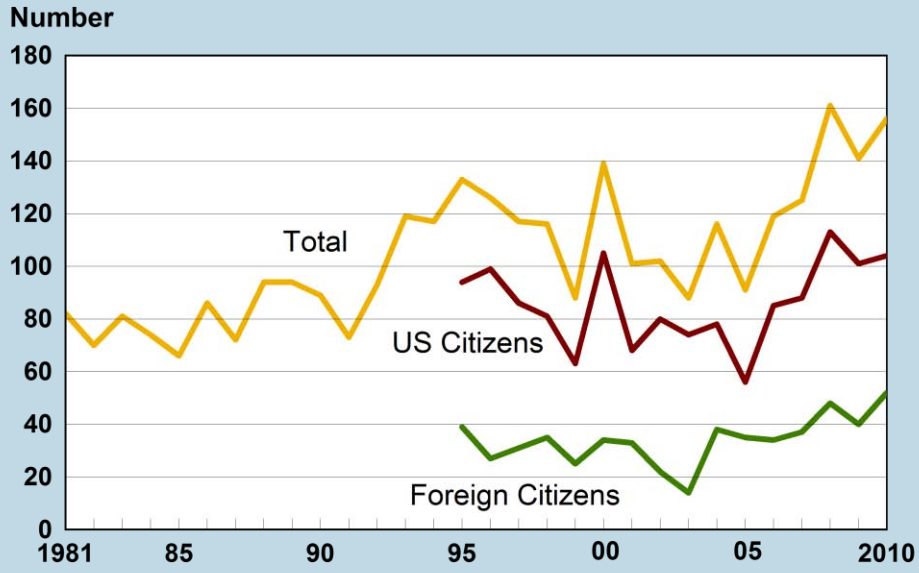

***Not all students who earn a PhD receive an en route master's degree.***

Exiting master's are awarded at departments that grant either a master's or PhD as their highest degree, whereas en route degrees can only be granted at departments where the PhD is the highest degree offered. The number of en route master's conferred has seen some substantial growth in the last 30 years and has been fluctuating at around 100 degrees in recent years. Of the students who earn astronomy PhDs, 75% or less earn a master's en route.

The class of 2010 is comprised of 156 astronomy doctorates with two-thirds of them going to US citizens. Compared to physics, where US citizens made up 47% of the PhDs conferred in the field, US citizens made up 67% of the graduating class earning astronomy doctoral degrees in 2010.

## Figure 7

**Astronomy PhDs Awarded by Citizenship, Classes 1981 through 2010.**

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***Unlike in physics, US citizens make up the majority of students earning PhDs in astronomy.***

## Table 4

**Astronomy Departments Averaging 5 or More Astronomy Doctorate's per Year, Classes of 2008, 2009 and 2010.**

| | Annual Average | | Annual Average |
|---|---|---|---|
| Harvard U (MA) | 9 | U of Arizona (Planetary Sci) | 5 |
| U of Arizona | 8 | U of California, Los Angeles | 5 |
| U of Texas, Austin | 7 | U of California, Santa Cruz | 5 |
| California Inst of Tech | 6 | U of Chicago (IL) | 5 |
| Pennsylvania State U | 6 | U of Maryland, College Park | 5 |
| U of California, Berkeley | 6 | U of Minnesota | 5 |
| U of Colorado, Boulder | 6 | U of Washington | 5 |
| Boston U (MA) | 5 | U of Wisconsin, Madison | 5 |
| Princeton U – Forrestal Campus (NJ) | 5 | | |

**Note: List includes only those departments that contributed degree data for all three years.**

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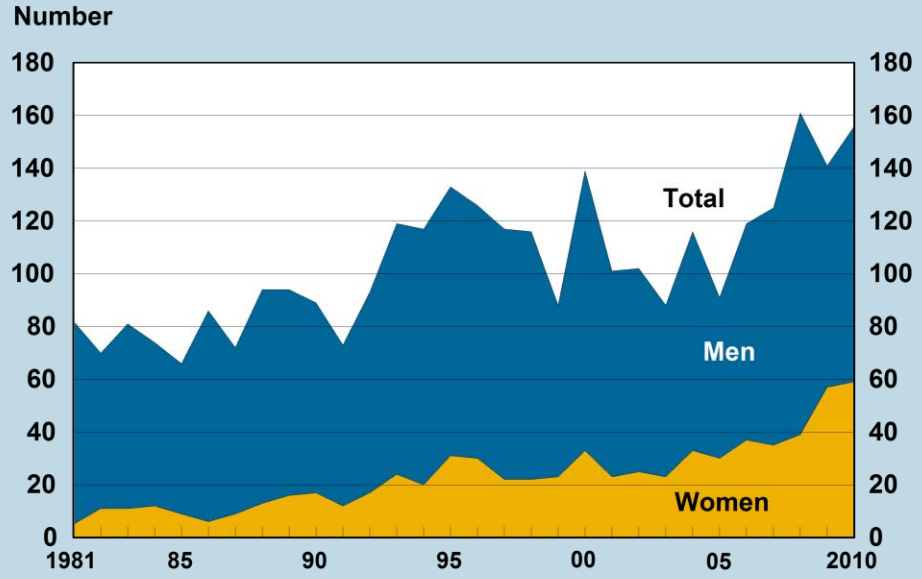
***The number of astronomy departments averaging 5 or more PhDs over a three year period has almost doubled compared to the preceding three year period.***

Overall, astronomy PhD production has experienced significant growth over the last 30 years. The number of astronomy PhDs in the class of 2010 is almost double the number conferred 30 years ago. The representation of women among astronomy PhD recipients has also been increasing. Women represented 12% of astronomy PhDs in the early 1980's and their representation has risen to around 34% in recent years.

## Figure 8

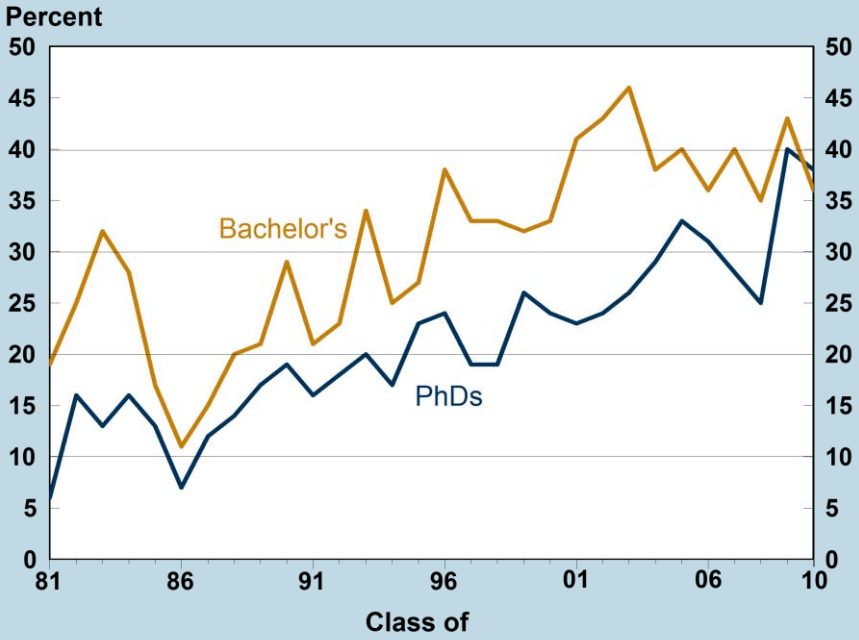
**Astronomy PhDs Awarded by Gender, Classes 1981 through 2010.**




*The representation of women among astronomy PhDs has been increasing.*

## Figure 9

**Percent of Bachelor's Degrees and Doctorate's in Astronomy Earned by Women, Classes 1981 through 2010.**

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*Of astronomy PhDs conferred, a larger percentage were earned by women than earned astronomy bachelor's degrees in the class of 2010.*

The class of 2010 marks the first year that a larger percentage of PhDs were earned by women in astronomy than earned bachelor's degrees. This occurrence is most likely due to the spike 7 years earlier in the proportion of women earning astronomy bachelor's degrees and subsequently going on to enter graduate study in astronomy.

**Appendix 1. Number of Astronomy Degrees Granted by Highest Astronomy Degree Offered by Department, 2009-10.**

| Highest Astronomy Degree Offered | Degree Awarded | | | Number of Departments |
|---|---|---|---|---|
| | Bachelor's | Exiting* Master's | PhDs | |
| PhD-granting | 271 | 15 | 156 | 40 |
| Master's-granting | 12 | 8 | | 3 |
| Bachelor's-granting | 99 | | | 35 |
| **Total** | **382** | **23** | **156** | **78** |

***Exiting master's are students who left their current departments with master's degrees.**

**Note: Nine of the 40 PhD-granting astronomy departments do not offer a bachelor's degree.**

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**Appendix 2. Trend in Astronomy Enrollments and Degrees, Academic Years 2000-2011.**

| Academic Year | Number of Astronomy Degrees Granted | | | Undergraduate Astronomy Major Enrollments | | Graduate Astronomy Student Enrollments | |
|---|---|---|---|---|---|---|---|
| | Bachelor's | Exiting* Master's | PhDs | Juniors | Seniors | 1st Year | Total |
| 2000-2001 | 274 | 13 | 101 | 391 | 461 | 180 | 809 |
| 2001-2002 | 325 | 22 | 102 | 420 | 478 | 170 | 807 |
| 2002-2003 | 325 | 22 | 88 | 385 | 576 | 201 | 892 |
| 2003-2004 | 316 | 27 | 116 | 441 | 540 | 218 | 966 |
| 2004-2005 | 343 | 27 | 91 | 437 | 584 | 212 | 999 |
| 2005-2006 | 351 | 30 | 119 | 511 | 565 | 188 | 1,026 |
| 2006-2007 | 336 | 18 | 125 | 379 | 569 | 206 | 1,077 |
| 2007-2008 | 327 | 36 | 161 | 364 | 536 | 193 | 1,081 |
| 2008-2009 | 322 | 29 | 141 | 388 | 515 | 215 | 1,065 |
| 2009-2010 | 382 | 23 | 156 | 382 | 605 | 193 | 1,083 |
| 2010-2011 | | | | 450 | 637 | 202 | 1,156 |

***Exiting master's are students who left their current departments with master's degrees.**

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## About the Survey

The Statistical Research Center of the American Institute of Physics conducts an annual census from October through February of all departments that offer degrees in astronomy (78) in the United States. Astronomy departments consist of stand-alone degree-granting departments (39) and departments that are administered along with a physics program (39). For the class of 2010, we received responses from 95% of these departments and for the class of 2009 we heard from 97%. Estimates were derived and included in the totals for non-responding departments.

In addition to this *focus on* there is a companion report, "Rosters of Astronomy Departments", which provides a department-level enrollment and degree snapshot of the class of 2010. It can be found on our website: http://www.aip.org/statistics/trends/reports/astrost.pdf

Astronomy Rosters from previous years can be found in our archives: http://www.aip.org/statistics/trends/archives/astrorost.htm

These reports are possible because of the efforts of department chairs, faculty, and staff in providing their departmental data to the AIP year after year. We thank them for their ongoing support of this survey series.