All graduate degree programs at Penn State are academically organized under one graduate college, The Graduate School, but with the graduate faculty located in, and graduate courses and graduate degree programs offered by the academic colleges that are generally organized around their subject matter. Some graduate programs may cross departments, colleges and even campuses, and such programs are called Intercollege Graduate Degree Programs, with many academically housed in the Graduate School and others housed in specific colleges or academic units. The colleges and enrollment units listed below offer graduate programs.

- Agricultural Sciences
- Arts and Architecture
- Donald P. Bellisario College of Communications
- Earth and Mineral Sciences
- Eberly College of Science
- Education
- Engineering
- Health and Human Development
- Information Sciences and Technology
- Intercollege
- International Affairs
- Liberal Arts
- Medicine
- Penn State Erie, The Behrend College
- Penn State Great Valley
- Penn State Harrisburg, The Capital College
- Ross and Carol Nese College of Nursing
- Smeal College of Business