

# ASEE and U.S. News: Data Collection Procedures and Rankings



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# U.S. News America's Best Graduate Engineering Schools rankings-Brief History

- ◆ 1987 reputation only
- ◆ Published annually starting in 1990
- ◆ Starting in 1990 the ranking methodology has been a mix of reputation and statistical data
- ◆ Top 25 1990-1993 with top 5 in 12 Specialty Departments
- ◆ Top 50 1994-thru present with top 10 (starting 1998) in approx. 12 Specialty Departments incl. chemical, civil, electrical, environmental, computer, etc.
- ◆ Since 1997 Engineering school rankings on-line in Free and in Premium version for a cost at [usnews.com](http://usnews.com).
- ◆ Extended grad engineering rankings-overall and in 12 specialties as well as more data--appears on [usnews.com](http://usnews.com) in the premium online edition and the free online version compared to what appears in the print.

## When and How Will the 2011 America's Best Graduate Schools Engineering Edition rankings be published?

- ◆ Online @ [www.usnews.com](http://www.usnews.com)—Free and premium version. Next rankings online 4/15/2010
- ◆ Monthly magazine-May 2010 issue date. Available for newsstand purchase 4/27/2010
- ◆ America's Best Graduate Schools 2011 edition: Multi-discipline guidebook 176 pages. On sale Tuesday 4/20/2010

## The Editorial Philosophy Behind the U.S. News America's Best Graduate Schools Engineering Rankings

- ◆ Consumer oriented mission-To provide prospective engineering students and their parents with key evaluative information they need to make an informed choice about grad engineering education that has important job and career implications.
- ◆ This choice is heavily influenced by the ever rising bill for tuition and room & board, travel, clothes, entertainment and other expenses.



## **The Editorial Philosophy Behind the U.S. News America's Best Graduate Schools Engineering Rankings**

- ◆ Provide the public and prospective students with an understanding of graduate engineering
- ◆ Give practical advice on many aspects of applying and financing graduate engineering school education
- ◆ As one part of our ongoing editorial reporting on educational issues
- ◆ Transparency in how the engineering rankings are done-U.S. News publishes clear and detailed methodologies.

## Why are the U.S. News Grad Engineering Rankings Helpful to Consumers?

- ◆ The U.S. News engineering rankings are based on accepted measures of academic quality.
- ◆ Many U.S. engineering schools use the same ranking data and factors that U.S. News uses to do their own internal performance analysis and to do peer-to-peer comparisons against other U.S. engineering schools
- ◆ U.S. News' ranking process is totally independent of the information published by the university or engineering school

## Why are the U.S. News Graduate Engineering Rankings Helpful to Consumers?

- ❑ What does all of this mean in today's global information marketplace?
- ❑ U.S. News--over the last 25-years--has become a trusted, respected and unbiased source of engineering rankings and assessments that prospective engineering school students in the U.S. and worldwide turn to for reliable advice and guidance.

# Graduate Engineering Schools Ranking Factors: Inputs and Outputs

- ◆ A combination of inputs and outputs are used in the Graduate Engineering ranking model that are a mixture of statistical and opinion data.
- ◆ Inputs include:
  - Research activity
  - Faculty resources
  - Student selectivity
- ◆ Outputs include:
  - Peer assessment
  - Practitioner assessment

## How are the U.S. News Best Graduate Engineering Schools Ranking Weights Selected?

- ◆ The selection of the engineering weights are based on several factors. They are:
  - 25+ years of experience in doing academic rankings
  - Education literature
  - Discussions with engineering educators
  - In the end U.S. News makes its best judgment

# ASEE is Very Important to the U.S. News Graduate Engineering Rankings

1. U.S. News uses ASEE's exact same definition of research expenditures on the U.S. News engineering stat survey
2. In early January as part the yearly data collection cycle U.S. News and ASEE compare the U.S. News collected research expenditure data with ASEE's collected research expenditure data
3. Then- U.S. News and ASEE contact schools over discrepancies between the two sets of research expenditure data. Discrepancies have decreased over time.
4. One problem is that some schools report their research expenditure data to ASEE on a schedule so that their data is not part the U.S. News and ASEE cross-check.
5. U.S. News has cross-referenced the U.S. News statistical surveys questions to ASEE's definitions to try to have consistent data reporting

## ASEE Very Important to the U.S. News Grad Engineering Rankings

1. Engineering specialties rankings in 12 areas w/largest doctoral programs.
2. Peer Surveys are sent to Dept. chair at each engineering school that offers doctoral programs in those 12 areas.
3. These ranking are based solely peer assessment survey using a 5-point Likert scale.
4. Names of schools with doctoral program and department chair names both are supplied to U.S. News by the American Society for Engineering Education.
5. 12 separate surveys-one survey per specialty
6. U.S. News could not do these specialty rankings this way without ASEE's assistance.

# U.S. News Grad Engineering Specialty Rankings-Which Areas are ranked?

1. Aerospace / Aeronautical / Astronautical
2. Biological / Agricultural
3. Biomedical / Bioengineering
4. Chemical
5. Civil
6. Computer Engineering (not done 2011 edition of Best Grad rankings-will resume again 2012 edition)
7. Electrical / Electronic / Communications
8. Environmental / Environmental Health
9. Industrial / Manufacturing
10. Materials
11. Mechanical
12. Nuclear

# Graduate Engineering Rankings-

## An overview of the methodology

- ◆ The weights that are used in the grad engineering ranking:
  - Peer Assessment—.25
  - Corporate and Hiring Contacts Assessment—.15
  - Student Selectivity—.10
  - Faculty Resources—.25
  - Research Activity—.25
- ◆ The universe of graduate engineering schools consists of those that offer a doctoral engineering degrees.
- ◆ In fall 2008, we surveyed 198 engineering programs, 189 of which were ranked. Those rankings online now.

# Graduate Engineering Rankings-Peer Assessment

- ◆ It is measured by an annual survey of engineering school deans and deans of graduate studies at each engineering program that offers a doctoral degree. Two surveys per school.
- ◆ Schools are marked on a scale of 1 (Marginal) to 5 (Distinguished). There is a “Don’t Know” option that is automatically selected, if no option is marked.
- ◆ In fall 2008 surveys were mailed. Approximately 55% of them were returned.

# Graduate Engineering Rankings- Corporate and Hiring Contacts Assessment

- ◆ It is measured by an annual survey of corporate and hiring contacts that employ graduates from graduate engineering schools.
- ◆ Corporate and hiring contacts were gathered from around 190 schools in the summer of 2008. These schools were all the schools ranked (i.e. they returned the survey and supplied ranking information).
- ◆ The format is identical to that of the Peer Assessment survey filled out by deans and deans of graduate studies.
- ◆ In fall 2008 surveys were mailed. Approximately 28% of them were returned.

# Graduate Engineering Rankings-Student Selectivity

- ◆ There are two factors involved in the student selectivity section. They are:
  - The average quantitative GRE score of entering students (weighted by .0675).
  - The acceptance rate (weighted by .0325). The additive inverse of the acceptance rate is used in the ranking calculations.
- ◆ The data are for all entering graduate students for the fall 2008.

# Graduate Engineering Rankings- Faculty Resources

- ◆ There are four factors involved in the faculty resources section. They are:
  - The ratio of full-time doctoral students to full-time faculty (weighted by .075).
  - The ratio of full-time master's students to full-time faculty (weighted by .0375).
  - The proportion of full-time faculty that are members of the National Academy of Engineering in calendar 2008 (weighted by .075).
  - The number of engineering doctoral degrees granted in the most recent academic year end June 2008 (weighted by .0625).
- ◆ Data are for 2008. Only full-time tenured and tenure-track faculty are used in calculations.

# Graduate Engineering Rankings-Research Activity

- ◆ There are two factors involved in the research activity section. They are:
  - The total externally funded engineering research expenditures (weighted by .15).
  - The average research expenditures per full-time faculty member (weighted by .10).
- ◆ Expenditures refer to separately funded research conducted by the school, averaged over 2007 and 2008. Only full-time tenured and tenure-track faculty are used in calculations.
- ◆ Only current year data is published .

# Undergraduate Engineering rankings

- ◆ 1991 to 1994
- ◆ Top 3 engineering specialty schools ranked.
- ◆ Carnegie Foundation for the Advancement of Teaching: Classifications of Institutions of Higher Education. Universe was of schools was the 14 colleges that granted at least half bachelor degrees in engineering and technology.
- ◆ Methodology used was the same multi-variable system used in the America's Best Colleges rankings for that year.

# Undergraduate Engineering rankings

- ◆ 1995
- ◆ All ABET accredited undergraduate programs (in the low 300s) in one category.
- ◆ Ranked using academic reputation only.
- ◆ Dean and associate dean of each program surveyed
- ◆ Asked to place each program in one of four tiers of academic quality. Highest score possible 4.0.
- ◆ Why the switch? Engineering broader than just 14 (at the time) engineering specialty schools.

# Undergraduate Engineering rankings

- ◆ Annually starting 1999 all approx. 367 ABET accredited schools divided into two categories.
- ◆ In current rankings posted online-180 undergraduate engineering programs at engineering programs with highest engineering degree offered is Ph.D.
- ◆ In current rankings posted online-187 undergraduate engineering programs whose highest engineering degree offered is bachelor's or master's.
- ◆ Rankings and specialty ranking based on Academic reputation only. Dean and associate dean surveyed at each program. Two surveys per school. School gets two votes.
- ◆ 5-point point scale used, same as America's Best Colleges.
- ◆ Why two categories? Suggested by The Engineering Deans Counsel of ASEE in mid 90s.

# Future of Engineering Rankings

- Engineering Rankings are here to stay.....
- Controversy will continue..
- Engineering academic community will remain highly interested in rankings.
- Primary audience will be consumers: prospective students, parents and alumni
- Internet continues to evolve as key way eng students find out about schools.
- Rankings are now global phenomenon and will continue to evolve on a country-by-country basis.

# Morse Code: Inside the College Rankings

- ◆ On June 1, 2007 U.S. News started a blog called:

[Morse Code: Inside the College Rankings](#)

link:

<http://www.usnews.com/blogs/college-rankings-blog/index.html>

- ◆ *Morse Code* provides deeper insights into the methodologies and is a forum for commentary and analysis of college, grad and other rankings.
- ◆ Future plans for this blog



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