

U.S. News: Measuring Research Impact

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U.S. News & World Report

ASEE Engineering Research Council

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The Engineering Rankings that U.S. News is doing now

- Best Graduate Schools -2017 Edition
 - Public relations preview for schools only- 3/9/16
 - Public release on www.usnews.com—3/16/2016
 - Best Graduate Schools 2017 edition: Multi-discipline guidebook. On sale Early April 2016
- Best Colleges
 - September 2016- Undergraduate Engineering
- Best Global Universities -October 2016.
 - Engineering
 - Computer Science
 - Materials Science
- Best Online Degree Programs-January 12, 2016.
 - Master's degree in Engineering programs
 - Computer Information Technology Programs includes computer engineering, computer science, information systems, information technology or software engineering.

The Editorial Philosophy Behind the U.S. News Engineering Rankings

- Consumer oriented mission-To provide prospective engineering students and their parents with key evaluative information they need in order to make an informed comparative choice about graduate engineering education and engineering education at other degree levels.
- This choice has very 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.

Implications of the U.S. News Engineering Rankings

- U.S. News has been publishing academic rankings for over 30 + years.
- U.S. News 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, comparisons between schools and guidance.
- Engineering schools use the rankings and data for peer comparisons

Challenges and pressures U.S. News faces in doing Engineering Rankings

- ❑ Can better outcome measures be developed at the undergraduate and graduate level to measure post-graduate success of engineering graduates?
- ❑ Can statistical indicators be developed that could be used in the undergraduate engineering rankings so they are not 100% based on academic reputation?
- ❑ Should U.S. News develop separate Engineering Technology rankings? What would it take to do such engineering technology rankings? How should they be done?
- ❑ Doing any of the U.S. News engineering rankings is a big logistics, data collection and analytical challenge. Our goal is to produce a ranking that uses the most accurate and complete data that is available.

Education > Best Graduate Schools > Top Engineering Schools



2016 Best Engineering Schools

- #1 Massachusetts Institute of Technology
Cambridge, MA
- #2 Stanford University
Stanford, CA
- #3 University of California—Berkeley
Berkeley, CA

[Full Engineering Schools Rankings »](#)

Engineers can build on the skills they learned as undergraduates with advanced degrees in areas ranging from biomedical engineering to nuclear engineering. U.S. News weighs factors such as reputation, research activity and student selectivity to rank the top graduate engineering schools. [See the methodology »](#)

Engineering Programs and Specialties

Aerospace / Aeronautical / Astronautical	Computer Electrical / Electronic / Communications	Industrial / Manufacturing / Systems
Biological / Agricultural	Environmental / Environmental Health	Materials
Biomedical / Bioengineering		Mechanical
Chemical		Nuclear
Civil		

Best Online Programs

These programs, ranked separately from the Best Engineering Schools, offer another option.

[Online Graduate Engineering](#)

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

1. Engineering specialties rankings in 13 areas w/largest doctoral programs.
2. Peer Surveys are sent to Dept. chair at each engineering school that offers doctoral programs in those 13 areas. Online survey used.
3. These ranking are based solely on 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 ASEE in 12 areas.
5. 13 separate surveys-one survey per specialty
6. U.S. News could not do these 12 specialty rankings this way without ASEE's assistance.
7. New in 2017 Edition Petroleum Engineering added as 13th graduate specialty ranking working with Petroleum Engineering department heads

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**
- 7. Electrical / Electronic / Communications**
- 8. Environmental / Environmental Health**
- 9. Industrial / Manufacturing**
- 10. Materials**
- 11. Mechanical**
- 12. Nuclear**
- 13. Petroleum**

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

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 2015, we surveyed 215 engineering programs, approx. 194 of which were ranked. Those rankings online now.

Graduate Engineering Rankings-Peer Assessment

- Weighted .25 of the overall score
- 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.

Graduate Engineering Rankings- Corporate and Hiring Contacts Assessment

- Weighted .15 of the overall score
- It is measured by an annual survey of corporate and hiring contacts that employ graduates from graduate engineering schools.
- U.S. News gathered the names of engineering school corporate and hiring contacts from the previously ranked engineering schools in summer 2015 via online survey. 10 names per school. The format is identical to that of the Peer Assessment survey filled out by deans and deans of graduate studies.
- Surveys were conducted online in fall 2015. All unduplicated names supplied by schools were surveyed.

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 2015.

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 2015 (weighted by .075).
 - The number of engineering doctoral degrees granted in the most recent academic year end June 2015 (weighted by .0625).
- Data are for 2015. 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 2014 and 2015. Only full-time tenured and tenure-track faculty are used in calculations.
- Only current year data is published .

[Home](#) > [Colleges](#) > [College Ranking Lists](#) > [Best Undergraduate Engineering Programs](#)

Best Undergraduate Engineering Programs



The undergraduate engineering program rankings were based solely on peer assessment surveys. To appear on an undergraduate engineering survey, a school must have an undergraduate engineering program accredited by ABET. These programs are split into two groups: schools whose highest engineering degree offered is a doctorate and schools whose highest engineering degree offered is a bachelor's or master's.

[See the Best Undergraduate Engineering Programs Ranking Methodology »](#)

Best Undergraduate Engineering Programs Rankings

(where doctorate is highest degree)



- | | |
|------------------|--|
| #1
Tie | Massachusetts Institute of Technology
Cambridge, MA |
| #1
Tie | Stanford University
Stanford, CA |
| #3 | University of California--Berkeley
Berkeley, CA |

► [Full rankings](#)

Best Undergraduate Engineering Programs Rankings

(where doctorate not offered)



- | | |
|------------------|--|
| #1
Tie | Harvey Mudd College
Claremont, CA |
| #1
Tie | Rose-Hulman Institute of Technology
Terre Haute, IN |
| #3
Tie | Franklin W. Olin College of Engineering
Needham, MA |
| #3
Tie | United States Military Academy
West Point, NY |

► [Full rankings](#)

Undergraduate Engineering rankings

- Done Annually
- Universe is approx. 400 ABET accredited schools divided into two categories.
- In current rankings posted online-184 undergraduate engineering programs at engineering programs with highest engineering degree offered is Ph.D.
- In current rankings posted online-216 undergraduate engineering programs whose highest engineering degree offered is bachelor's or master's.
- Rankings and 12 specialty ranking 100% 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 Best Colleges. Counts used for specialties
- Why two categories? Suggested by The Engineering Deans Counsel of ASEE in mid 90s.

[Education](#) > [Online Education](#) > [Online Graduate Engineering Degrees](#)



Best Online Graduate Engineering Programs

#1	University of California—Los Angeles (Samueli) Los Angeles, CA
#2	University of Southern California (Viterbi) Los Angeles, CA
#3	Columbia University (Fu Foundation) New York, NY
#4	Pennsylvania State University—World Campus University Park, PA

[See Full Rankings](#)

There are several academic routes for those earning an online engineering degree to pursue, including civil, software and electrical engineering, among other specializations. Some master's of engineering programs require students to participate in an internship, and a few require a comprehensive exam. U.S. News evaluated several factors to rank the best online engineering degree programs, including reputation, faculty credentials and student services and technologies. [See the methodology »](#)

Online Graduate Engineering Degrees

[Biomedical Engineering / Bioengineering](#), [Civil Engineering](#), [Electrical Engineering](#), [Engineering Management](#), [Mechanical Engineering](#)

Education > Online Education > Online Graduate CIT Degrees



Best Online Graduate Computer Information Technology Programs

- #1 University of Southern California
Los Angeles, CA
- #2 Virginia Tech
Blacksburg, VA
- #3 Boston University
Boston, MA
- #4 Pennsylvania State University—World Campus
University Park, PA

[See Full Rankings](#)

Degree Finder

The U.S. News University Directory can match you with online programs that meet your education criteria in a few simple steps.

[Start Now](#)



For anyone interested in programming, designing or sharing technology expertise, an online degree in computer and information technology (CIT) may be the best option. Students earning a CIT degree online can choose among computer science or computer engineering specializations and can complete the online degree quicker if they have previous CIT experience. U.S. News evaluated several factors to rank the best online CIT degree programs, including selectivity, graduation rates and student services and technologies. [See the methodology »](#)

Online Graduate Computer Information Technology Degrees

Computer Information Systems, Computer Science, Cybersecurity, Information Technology, Instructional Technology, Software Engineering, Telecommunications

Undergraduate Computer Information Technology Degrees

Computer Science, Cybersecurity, Information Technology, Network Administration

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DOW to Drop 80% in 2016

thesovereigninvestor.com

80% Stock Market Crash to Strike in 2016, Economist Warns.

Best Online Programs – 2016 Edition

- Schools report data specific to their distance education master's programs
- To be eligible:
 - All program requirements accessible via Internet; excluding testing, orientations, support services.
 - School has an ABET accredited engineering program.
- Engineering- 82 programs ranked in January, 2016.
- Computer Information Technology -48 schools ranked
- Rankings 85% statistical, 15% peer reputation

Education > Best Global Universities



Best Global Universities

The U.S. News rankings, based on schools' academic research and reputation, allow students to compare universities around the world.

[See the Global Universities Rankings »](#)

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Arts and Humanities

Geosciences

Pharmacology and Toxicology

Biology and Biochemistry

Immunology

Physics

Chemistry

Materials Science

Plant and Animal Science

Clinical Medicine

Mathematics

Psychiatry/Psychology

Computer Science

Microbiology

Social Sciences and Public Health

Economics and Business

Molecular Biology and Genetics

Space Science

Engineering



U.S. News College Compass

- Expanded Profiles for Nearly 1,800 Schools
- Minimum TOEFL Scores
- Comprehensive Financial Aid Info


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Best Global Universities – 2016 edition

- The second U.S. News Best Global Universities rankings launched on www.usnews.com on October 6, 2015.
- The Best Global Universities rankings are powered by data from Thomson Reuters InCites™ research analytics solutions.

Best Global Universities – 2016 edition

- Weights and ranking factors were developed by U.S. News
- Methodology of overall Top 750 Best Global Universities focused on institution's research performance using 12 factors: global and regional reputation, bibliometric indicators and school level data
- Meth: <http://www.usnews.com/education/best-global-universities/articles/methodology>

Best Global Universities rankings include:

- Top 750 Universities worldwide in 57 countries-up from 500 and 49 last year
- Five regional rankings - Africa, Asia, Australia/New Zealand, Europe and Latin America (Africa added)
- 32 country rankings – including top institutions in: Canada, China, France, Germany, Italy, Japan, the Netherlands, South Korea, Spain, Sweden and the United Kingdom
- Top universities in 22 subjects in such key fields as chemistry, clinical medicine, computer science, economics and business, engineering, environment/ecology, mathematics and physics.
- Arts & Humanities added as new subject area

The 22 subjects in the Best Global Universities

Subject rankings:

Arts and Humanities
Agricultural Sciences
Biology and Biochemistry
Chemistry
Clinical Medicine
Computer Science
Economics and Business
Engineering
Environment/Ecology
Geosciences
Immunology

Materials Science
Mathematics
Microbiology
Molecular Biology and Genetics
Neuroscience and Behavior
Pharmacology and Toxicology
Physics
Plant and Animal Science
Psychiatry/Psychology
Social Sciences and Public Health
Space Science

Methodology used to rank the 22 Best Global Universities Subjects: The soft sciences are computer science; economics and business; engineering; and social sciences and public health in addition to math; all others are hard sciences + arts and humanities.

Ranking Indicator (Subject)	Weights Used for Soft Sciences	Weights Used for Hard Sciences	Weights Used for Arts and Humanities
Global research reputation	12.50%	12.50%	20.00%
Regional research reputation	12.50%	12.50%	15.00%
Publications	17.50%	15%	10.00%
Books	Not Applicable	Not Applicable	15.00%
Conferences	Not Applicable	Not Applicable	5.00%
Normalized citation impact	7.50%	10%	7.50%
Total citations	12.50%	15%	7.50%
Number of publications that are among the 10 percent most cited	17.50%	15%	7.50%
Percentage of total publications that are among the 10 percent most cited	10%	10%	7.50%
International collaboration	10%	10%	5.00%

U.S. News Academic Insights

Analytic dashboard that enables schools to visualize and compare 25 years of U.S. News rankings and data.

- Managed by separate team within U.S. News.
- Create peer groups and conduct comparisons.
- Visualize data within the platform.
- Export data to .csv for internal use or as images.
- See past years' archived methodologies.
- Includes Best Colleges, Best Graduate Schools, Best Online Programs.
- Only available to institutions.



U.S. News Academic Insights

- Demos and trials can be provided.
- Email: academicinsights@usnews.com
- Web: <https://ai.usnews.com>



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.

THE END