HEEACT releases “2009 Performance Ranking of Scientific Papers for World Universities”

July 30, 2009

HEEACT released the “2009 Performance Ranking of Scientific Papers for World Universities” on July 30, 2009 with its latest rankings - overall rankings and rankings by fields.

On July 30, 2009, the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) released the rankings of “Performance Ranking of Scientific Papers for World Universities” that included overall rankings and rankings by six fields. In overall rankings, Harvard University from the USA still leads as the No. 1 in world rankings, University of Cambridge from UK leads as the best university in Europe (as No. 15), and the University of Tokyo leads as the best university in Asia Pacific (as No. 14).

This annual ranking has been published since 2007 and the 2009 ranking is its third edition. Top 10 in overall rankings in sequence are: Harvard University, Johns Hopkins University, Stanford University, University of Washington - Seattle, University of California - Los Angeles, University of Michigan - Ann Arbor (No. 7 last year), Massachusetts Institute of Technology (No. 8 last year), University of California - Berkeley (No. 6 last year), University of Pennsylvania (No. 11 last year), and Columbia University (No. 13 last year). Compared with last year, both University of Michigan - Ann Arbor and Massachusetts Institute of Technology improved by one position, University of California - Berkeley dropped two positions, and University of Pennsylvania and Columbia University moved up to the Top 10 this time.

When ranked by fields, Harvard University still leads as the No. 1 in Clinical Medicine, Life Sciences and Social Sciences fields. Massachusetts Institute of Technology has a better ranking than University of California-Berkeley and becomes No. 1 in Engineering, Computing & Technology field, while University of California - Berkeley leads as No. 1 in Natural Sciences field, and University of California - Davis as No. 1 in Agriculture & Environment Sciences field.
Equal emphasis on short-term and long-term indicators, but stressing indicators on research quality more than quantity

To better understand the academic competitiveness of the research universities in Taiwan, HEEACT initiated the annual “Performance Ranking of Scientific Papers for World Universities” in 2007. The HEEACT ranking system focuses on three major types of analytic indicators: research productivity, research impact, and research excellence to evaluate and rank the performance of scientific papers among the top universities in the world.

According to HEEACT, in addition to providing rankings by fields, the 2009 performance ranking is unique in its emphasis on the quality of the scientific papers, with indicators on research quality weighing up to 80%. It takes into account a university’s short-term research performance (constituting 55% of the score), thus ensuring a more objective comparison between universities of various lengths of history. To accurately reflect the quality of the performance ranking, the HEEACT ranking encompasses eight indicators: number of articles in the last 11 years, number of articles in the current year, number of citations in the last 11 years, number of citations in the last 2 years, average number of citations in the last 11 years, H-index of the last 2 years, number of highly cited papers, and number of articles in high-impact journals in the current year.

HEEACT ranking neutralizes impact of university size to accentuate smaller universities with excellent research quality

In addition, the number of articles is often influenced by the faculty size, leading to the advantages in ranking for larger universities with more faculty staff. In view of this possible bias, HEEACT neutralizes 40% of the indicators (number of articles in the last 11 years, number of articles in the current year, number of citations in the last 11 years, and number of citations of the last 2 years) with the number of full-time faculty members to use as reference rankings in the overall rankings.

At the same time, among the eight indicators employed, two indicators with weighting up to 30% (average number of citations of the last 11 years, h-index of the last 2 years) also served to lower the impact from university size to neutralize the bias toward larger universities. The results brought several smaller universities with high research quality into the spotlight. The weightings of indicators affected by university size amounted to 70%.

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The 2009 rankings maintain the same indicators and their perspective weightings from the 2008 rankings along with the fields. The changes in the 2009 rankings are made in the selection of target universities. While the 2008 rankings chose universities in the overall rankings as the database in its rankings in different fields, this year, high-performing schools from ESI database as well as top universities from the QS World University Rankings by Times Higher Education Supplement (THES), and the Academic Ranking of World Universities (ARWU) by Shanghai Jiao Tong University were added to the database for analysis.

**Overall ranking: USA still leads as the No. 1 in world rankings**

The universities in the Top 100 and Top 500 are again predominantly in the USA (57 universities in top 100, 60 last year), and UK follows with 8 (7 last year), Canada with 6, and Japan and Netherlands with 4. In the Top 500, there are 163 universities from the USA, and Germany follows with 45 (43 last year), UK with 36 (37 last year), and Japan (35 last year) and Italy with 29. In Asia, Japan leads the performance of scientific research ranking in the top 500 again, and China follows with 15, South Korea with 7, Taiwan with 7 and Hong Kong with 5.

**Rankings by Fields: Emphasizing the strengths of each university**

"Rankings by Fields" aims to understand the unique and strong features of the universities. Beginning in 2008, HEEACT provided further rankings by six fields - Agriculture & Environment Sciences, Clinical Medicine, Engineering, Computing & Technology, Life Sciences, Natural Sciences, and Social Sciences. Along with the overall rankings, the top 300 universities by these fields are also published bilingually on the official website.

Top 5 of ranking orders in Agriculture & Environment Sciences field and Natural Sciences field are the same as last year. In Agriculture & Environment Sciences field, all schools are in the USA except for Wageningen University from the Netherlands. Also, in the Natural Sciences field, only University of Tokyo is from Japan, and others are all from the USA.

In Clinical Medicine and Life Sciences field, Harvard University, Johns Hopkins University, and University of California - San Francisco are top 3 in sequence and the same as last year. In the Clinical Medicine field, University of Pennsylvania improved 3 positions as
No. 4, while University of California - Los Angeles moved back one position as No. 5. In the Life Sciences field, Stanford University remained in No. 4 and University of Pennsylvania improved three positions as No. 5 for this time.

Top 5 in Engineering, Computing & Technology field by ranking sequence are: Massachusetts Institute of Technology (No. 2 last year), University of California - Berkeley (No. 1 last year), Georgia Institute of Technology (No. 6 last year), National University of Singapore (No. 3 last year), and Stanford University (No. 4 last year).

Top 5 in Social Sciences field in sequence are: Harvard University, University of Michigan - Ann Arbor, University of Pennsylvania (No. 4 last year), University of California - Los Angeles (No. 3 last year), and Columbia University. Compared with last year, only the ranking orders of University of Pennsylvania and University of California - Los Angeles were interchanged, others remained the same.

**More universities in Taiwan are ranked in the Top 500 with better rankings than previous year**

In HEEACT’s recently published rankings, universities in Taiwan showed improvements in rankings compared to the previous rankings. Seven universities entered the top 500 compared to the five from last year. These seven universities include: National Taiwan University ranked as No. 102, National Cheng Kung University No. 307, National Tsing Hua University No. 347, National Chiao Tung University No. 456, Chang Gung University No. 479, National Central University as No. 483, and National Yang Ming University ranked as No. 493. If the ranking is adjusted based on university size, Taiwan’s universities will fare better in the rankings.

When ranked by fields, universities in Taiwan performed even better, with 8 schools in Engineering, Computing & Technology field (National Cheng Kung University, National Taiwan University, National Chiao Tung University, National Tsing Hua University, National Sun Yat-Sen University, National Central University, National Taiwan University of Science and Technology, and National Chung Hsing University), 5 in Natural Sciences field (National Taiwan University, National Tsing Hua University, National Cheng Kung University, National Chiao Tung University, and National Central University), 2 universities in Agriculture & Environment Sciences field (National Taiwan University and National Chung Hsing University), 3 in Clinical Medicine field
one in Life Sciences field (National Taiwan University) and one university in the Social Sciences field (National Taiwan University) made it into the top 300 rankings. The results showed that in 2009, more universities reached the top 300 rankings. Moreover, this was the first time Taiwan’s university was ranked among top 300 in Social Sciences.

The 2009 Performance Ranking of Scientific Papers for World Universities is published on the official website of Higher Education Evaluation and Accreditation Council of Taiwan. Please visit the website for detailed listings: http://ranking.heeact.edu.tw.

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