# A NEW FRAMEWORK FOR EVALUATION OF FIELD BASED ACADEMIC PERFORMANCES OF HIGHER EDUCATION INSTITUTIONS

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Approval of the Graduate School of Informatics

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# ABSTRACT

A NEW FRAMEWORK FOR EVALUATION OF FIELD BASED ACADEMIC PERFORMANCES OF HIGHER EDUCATION INSTITUTIONS

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Measurement and evaluation of academic performance is an highly debated research area and results of the studies in this area are closely followed by a large segment of the society. In general, researches conducted in this domain evaluate higher education institutions as a whole, but such an approach actually represents an average performance of the research fields, which are actively studied by the members of institutions. This may be misleading, because academic performance varies for each university depending on the field of research. However, people who are interested in the results of these studies require more detailed information about field based academic performances of institutions.

One of these studies mentioned above have been implemented in 2011 by *University Ranking by Academic Performance* (URAP) research laboratory which was established in Middle East Technical University - Informatics Institute. In this study, 2000 universities around the world have been ranked according to multiple criteria in terms of overall academic performance.

Interests shown to results of the system implemented by URAP revealed a need for a more comprehensive ranking system, which deals with the evaluation of field based academic performance.

In this sense, within the scope of this study, universities ranked by URAP research laboratory were evaluated in terms of their academic performance in the following six research fields;

- Agriculture & Environmental Sciences (AGE)
- Clinical Medicine (MED)
- Engineering, Computing & Technology (ENG)
- Life Sciences (LIFE)
- Natural Sciences (SCI)
- Social Sciences (SOC)

Institutions in this study has been evaluated according to data that have been collected from ISI - Web of Knowledge for the indicators listed below.

- Article Count (last year)
- Total Document Count (last 5 years)
- Cumulative Journal Impact (last 5 years)
- Total Citation Count (last 5 years)
- H-Index (average of last 5 years)

The results indicate that status of universities from the point of academic performance varies according to the research field.

Keywords: academic performance evaluation, measurement of research quality, university ranking

# ÖZ

YÜKSEKÖĞRETİM KURUMLARINDA ALAN BAZLI AKADEMİK BAŞARIM DEĞERLENDİRMESİ İÇİN YENİ BİR ÇERÇEVE

Ömrüuzun, Fatih
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Akademik başarımın ölçümü ve değerlendirilmesi oldukça fazla tartışılan araştırma konularından birisidir. Bu alandaki çalışmaların sonuçları toplumun büyük bir kesimi tarafın-dan yakından takip edilmektedir.

Bu alanda yapılan çalışmalar genellikle yükseköğretim kurumlarını bir bütün halinde değerlendirmekte, dolayısıyla çalışmaların sonuçları kurumların araştırma yaptığı tüm alanlardaki ortalama akademik başarımlarını ortaya koymaktadır. Fakat, kurumlardaki akademik başarım, araştırma yapılan alana göre farklılık göstermektedir. Yükseköğretim kurumlarının alan bazlı başarımlarının ölçüldüğü çalışmalarda ise genellikle incelemeye alınan kurumların miktarının yetersizliği göze çarpmaktadır. Akademik başarımın ölçümü ve değerlendirilmesi konusunda yapılan çalışmaların sonuçlarıyla yakından ilgilenen kişi ve kurumlar, değerlendirmeye alınan kurumların farklı araştırma alanlarındaki başarımları hakkında daha fazla bilgiye ihtiyaç duymaktadır.

Yukarıda bahsedilen çalışmaların bir örneği Orta Doğu Teknik Üniversitesi - Enformatik Enstitüsü bünyesinde kurulan University Ranking by Academic Performance (URAP) araştırma

laboratuvarı tarafından 2011 yılında yapılmıştır. Bu çalışmada dünya çapında 2000 üniversite çoklu başarım ölçütleri doğrultusunda ortalama akademik başarım açısından değerlendirilmiştir.

Çalışmaya gösterilen yoğun ilgi neticesinde, yükseköğretim kurumlarının alan bazlı başarımları hakkında bilgi verebilecek yeni bir çalışma ihtiyacı doğmuştur.

Bu çalışma bünyesinde, yukarıda bahsedilen ihtiyaçtan yola çıkılarak, URAP araştırma laboratuvarı tarafından incelenen yükseköğretim kurumlarının akademik başarımları bu kez aşağıda adı geçen araştırma alanları açısından değerlendirilmiştir;

- Ziraat ve Çevre Bilimleri
- Tıp
- Mühendislik Bilimleri
- Yaşam Bilimleri
- Temel Bilimler
- Sosyal Bilimler

Çalışma bünyesinde değerlendirilen üniversiteler, verileri ISI - Web of Knowledge'dan alınmış olan aşağıdaki başarım ölçütleri açısından incelenmiştir;

- Makale Sayısı (son yıl)
- Toplam Döküman Sayısı (son 5 yıl)
- Toplam Dergi Etki Faktörü (son 5 yıl)
- Toplam Atıf Sayısı (son 5 yıl)
- H-İndeks Değeri (son 5 yıla ait ortalama)

Araştırmanın sonuçları ve istatistiksel analizler göstermektedir ki üniversitelerin akademik başarımları araştırma alanlarına göre değişmektedir.

Anahtar Kelimeler: akademik başarım, araştırma kalitesi, üniversite sıralaması

*to my family and members of URAP Center...*

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# CHAPTER 1

# INTRODUCTION

In recent years, there has been an increasing interest in performance and quality measurement issues regarding all kind of organizations in their field of activity. These studies may be done by the organizations themselves and also be made by impartial parties. As a result of these works, organizations take advantages of monitoring their past or current status to be aware of their positions through others.

As in other fields, performance and quality evaluation is also an important issue for academia and they play a crucial role on improvement of academic quality for all kind of academic units such as academicians, departments or institutions. Due to competitive and collaborative environment of academia, the academic units are deeply interested in the results of these studies, in order to plan their short and long term goals. Outputs of researches conducted on this topic are also followed closely by individuals and policy makers in higher education. Therefore, many local or global scale studies have been done on this subject and number of similar studies are increasing day by day. However, results of these studies are discussed heatedly and there are many objections raised due to their methodologies, metrics and data sources.

Since the declaration of the first institution based ranking system named "U.S. News and World Report College and University Rankings", there have been a proliferation on this topic. As it is mentioned earlier, this attention on ranking systems has have made discussions regarding their procedures, indicators and data sources significant. Performance indicators used by ranking systems have became the most criticized components of these studies. Owing the fact that all the studies in this topic prefer to use different indicators, their sufficiency always became an objected issue. In addition to this, data sources used by systems are always criti-

cized in terms of their objectivity and compliance. Depth and scope of ranking systems have also been considered by the audience of the studies. For instance, some systems evaluate institutions in their scope as a whole unit, where others examine field based performances of the institutions. Similarly, certain studies limit their scope with institutions from a specific counties, on the other hand, regional and global wide studies also have been done.

In correlation, the first promising study in this domain in Turkey was published by Prof. Dr. Ural Akbulut (Former President of METU) to overlay the status of Turkish universities in world ranking lists of that time. Subsequently next year, Dr. Akbulut announced a follow-up study that ranks Turkish universities according to their academic performances. This research has been initiated with the establishment of *University Ranking by Academic Performance (URAP)* research laboratory in Middle East Technical University - Informatics Institute. In 2011, overall academic performance ranking of 2000 world universities was published by URAP which was the first study that is also going to be conducted annually in the upcoming years (University Ranking by Academic Performance, 2011). Results of this study has seen a great interest all around the world, so that, members of the URAP research laboratory decided to elaborate the analysis with a field based academic performance ranking. In accordance, this piece of work covers up field based academic performance evaluation of those universities that were involved in the URAP 2010 world ranking.

In this study, the terms ”university”, ”institution”, ”organization”, and ”Higher Education Institution (HEI)” are used interchangeably. Also, the terms ”system”, ”ranking system”, and ”university ranking system” carry the same meaning.

**Structure of the Study**

Chapter 2 begins by describing relevant disciplines about the topic. Later on, key terms about the study are explained to smooth the way for readers. The third part gives a large scaled review about the term university ranking. In the last part, world wide known field based ranking systems and field based academic performance evaluation methods proposed in the literature are discussed.

Chapter 3 involves the new framework that constitutes the main component of the thesis, and consists of three parts. In the first part methodology of the new framework is detailed. The following part explain the phases of research conducted: aim & scope definition, performance

indicators, data collection steps, and used methods while scoring and weighting of the results obtained. The last part of Chapter 3 gives information about the limitations of the study.

Results of the study and corresponding statistical analysis are given in Chapter 4.

Chapter 5 consists of conclusions and future studies related with the research conducted.

Finally, appendices are presented at the end of the document.

# CHAPTER 2

# LITERATURE SURVEY

This chapter consists of four parts and starts with a deep review of disciplines related with the study. In the next part, description of the terms relevant to academic performance evaluation will be given. The following part informs the reader about university ranking phenomenon by presenting classification of current systems and listing common processes and challenges they share. In the fourth part of this chapter, a comprehensive survey on current field and/or subject based global ranking systems will be undertaken.

## 2.1 Relevant Disciplines

The rapid increase in number of studies related with bibliography has led to emergence of new disciplines which deals with extraction, classification, analysis and evaluation of bibliographic data. However, (Hood & Wilson, 2001) indicates that, definitions of the terms bibliometrics, scientometrics and informetrics cause a semantic confusion. This section of the study presents an overview of these disciplines in terms of their history and field of interest.

### 2.1.1 Bibliometrics

In December 1969, Alan Pritchar published a paper in which he described the term bibliometrics as "*the application of mathematics and statistical methods to books and other media of communication*" (Pritchar.A, 1969). In the same issue of *Journal of Documentation*, there had been another article written by Fairthorne, who depicts the term bibliometrics as "*quantitative treatment of the properties of recorded discourse and behaviour appertaining to it*" (Fairthorne, 2005). However, this definition was criticized by Broadus, in terms of unlimited

features of published items and unmanageably wide nature of this definition (Broadus, 1987).

Afterwards, definition of bibliometrics had been reinterpreted by others and they have proposed well-formed descriptions. In 1981, Potter demarcated the definition of bibliometrics and redefined the term as:

> "*Bibliometrics is, simply put, the study and measurement of the publication patterns of all forms of written communication and their authors*" (Potter, 1981)

After two years, Machlup and Mansfield have put forward a follow up clarification to the concept as "*statistical studies of the growth and distribution of the literature*" (Machlup & Mansfield, 1983).

On the other hand, (Sengupta, 1992) argues that the first bibliometric study have been done by (Campbell, 1896) using statistical methods to exhibit distribution of subjects in publications.

Overall, keeping all these definitions in mind, one of the most comprehensive conception of bibliometrics came from ALA Glossary of Library and Information Science: "The use of statistical methods in the analysis of a body of literature to reveal the historical development of subject fields and patterns of authorship, publication, and use. Formerly called statistical bibliography" (Usdin, 1985).

### 2.1.2 Scientometrics

The term "naukometriya", namely the scientometrics, was first introduced by (Nalimov & Mulechenko, 1969) in Russian. Basically, the term bibliometrics can be defined as "*the study of all aspects of the literature of science and technology*" (Hood & Wilson, 2001).

Tibor Braun has founded journal *Scientometrics* in 1978 in Hungary, and this step has played an important role in increasing awareness of the term. Establishment of *International Society for Scientometrics and Informetrics (ISSI)* in 1993 is also a milestone in the history of scientometrics.

In addition to (Hood & Wilson, 2001), an alternative definition for scientometrics have been provided by (Tague-Sutcliffe, 1992) as:

> "*the study of the quantitative aspects of science as a discipline or economic ac-*

*tivity. It is part of the sociology of science and has application to science policy-making*".

### 2.1.3 Informetrics

The term informetrics was derived from German term "informetrie" and introduced by (Nacke, 1979) to define a component of information science, which deals with measurement of information by applying mathematical methods. Also, he designates the term as a sister field of scientometrics.

The proximity between the definitions of informetrics, scientometrics and bibliometrics was remarked by (Bonitz, 1982) and it is suggested that "library informetrics" and "informetrics of science" should be separated as two different terms.

Accordingly, formally the concept could be defined as:

> "*the study of quantitative aspects of information in any form, not just records, bibliographies, and in any social group not just scientists. ... Two phenomena that have not, in the past, been seen as a part of bibliometrics or scientometrics, but fit comfortably within the scope of informetrics are: definition and measurement of information, and types and characteristics of retrieval performance measures.*" (Tague-Sutcliffe, 1992)

## 2.2 Related Terminology

In this section of the study, definitions of terms related with the concepts of academic performance evaluation, measurement of research performance and university ranking are presented.

### 2.2.1 Scientific Publication / Document

In the most simple sense, scientific publication is the output of a research in an academic discipline, which includes justification, methodology, conclusion, results and utilized resources. Type of scientific publication varies according to the field that the research carried on. For instance, in science and medical fields, usually result of a research is shared via publishing an

article. On the other hand, researchers in different fields such as social sciences and arts & humanities share their findings in different formats. List of commonly used scientific publication types are listed in Table 3.1.

### 2.2.2 Citation

Generally, definition of citation is to provide a reference to some one's published or unpublished intellectual property in a formal structure. In bibliometrics, citation count of a document is widely accepted as a popularity indicator for the related study. Because of this reason, citation count is included in many of the academic performance evaluation systems. It should not be ignored that, some studies in the literature are criticized and cited due to their inadequacy and mistakes.

### 2.2.3 Self Citation

A reference is called self-citation when the author cites his/her own previous study. From the point of research performance measurement, if the citation count is preferred as an indicator, it's vital to exclude number of self citations from total citations count.

### 2.2.4 Citation Database / Index

The most important reason of emergence of citation databases is to make a determination of how the information produced is used by the community. This is an important indicator to measure the quality of the information.

According to (Thomson Reuters' Scientific Essays, 2011), there are definite factors which motivates the foundation of citation indexing systems. Firstly, as a result of the augmenting investments in scientific research and development after the World War II, the number of scientific publications drastically increased. Hence, this development has forced researchers to seek high quality journals for their publications. The second reason was the slowness of the process of subject indexing at that time, which influenced the researchers negatively. Finally, major developments in computer technology has played an important role in the emergence of citation databases.

Idea of machine generated citation database was first mentioned by Dr. Eugene Garfield, who aimed to remove human factor in document indexing, in 1955 (Garfield, 1955). Nowadays, citation databases track millions of scientific documents in numerous fields and make it possible to search or report entire content for researchers.

### 2.2.5 H-Index

Within the literature, there have been huge number of methods proposed to measure the impact of an individual's research output. Undoubtedly, H-Index is one of the most well known method among these studies and it is described as follows by (Hirsch, 2005);

> *A scientist has index h if h of his/her Np papers have at least h citations each, and the other (Np-h) papers have no more than h citations each.*

where Np= Number of papers.

An example H-Index calculation is given in Table.

Table 2.1: Example calculation of H-Index

| **Publication** | **Citation Count** |
|---|---|
| Publication 1 | 6 |
| Publication 2 | 7 |
| Publication 3 | 9 |
| Publication 4 | 11 |
| Publication 5 | 13 |
| Publication 6 | 15 |
| Publication 7 | 17 |
| Publication 8 | 19 |
| Publication 9 | 20 |
| Publication 10 | 38 |

According to the above presented definition, author's 10 publications are cited at least 10 times. Then, the author's H-Index value becomes 10.

### 2.2.6 Journal Impact Factor

It's a fact that, one of the important factors in determining the quality of a publication is the quality of the journal where the article is published. Based on this idea, "impact factor" was

suggested by (Garfield, 1955), who is the founder of the Institute for Scientific Information (ISI).

The data used during the calculation of impact factor journals is as follows;

> *A journal's impact factor is based on 2 elements: the numerator, which is the number of citations in the current year to items published in the previous 2 years, and the denominator, which is the number of substantive articles and reviews published in the same 2 years.* (Garfield, 2006)

As an example, impact factor calculation of journal x for year 2011 is given in Figure 2.1.

$$Journal\ Impact\ Factor = \frac{Citation\ count\ of\ items\ published\ in\ 2009\ and\ 2010{:}\mathbf{30}}{Total\ citable\ items\ published\ in\ 2009\ and\ 2010{:}\mathbf{120}} = \mathbf{0.25}$$

Figure 2.1: Example Journal Impact Factor calculation

## 2.3 University Ranking

As mentioned in Chapter 1, declaration of first institution based ranking system "U.S. News and World Report College and University Rankings" has led to an increase in attention to university ranking phenomenon and development of alternative ranking systems. In this part of the study, an overview of categorization, common process and possible challenges of ranking systems will be presented.

### 2.3.1 Categories

Since the early 1980s, increased interest in the university ranking systems has resulted in emergence of alternative systems which differentiated in focus, scope, and data sources.

In terms of scope, university ranking systems can be classified as national, regional or national level. The biggest variation between these systems are related to the type of data used and number of institutions covered. In general, global or regional systems prefer to use more generic data such as citation and publication count, international awards or medals etc. On the other hand, national wide systems can use more elaborative data, due to ease of access.

Annual research budgets, student and faculty count and number of projects handled are some of the preferred indicators of national wide systems.

In addition to scope, focus of a ranking system is another distinguishing factor in terms classification. Ranking systems can be divided into two groups according to their focus. First group covers the systems that evaluate HEIs as a whole, and the second group includes field or subject based ranking systems. The disadvantage of the systems included in the first group is that they represent average performance of the research fields, which are actively studied by the members of the HEIs. Therefore, members of the society who need detailed information on the subject does not prefer these systems. On the other hand, systems in the second group are also criticized due to their methodologies in selection of fields or subjects. In spite of the discussions about their methodologies, field or subject based ranking systems present more accurate results for the people who are interested in university ranking systems.

The data sources preferred in the methodology of ranking systems is another discriminating point. Some of the systems rank universities according to surveys or expert opinions. This approach causes a discussion about the objectivity of the data source. On the other hand, ranking systems that make use of open data sources such as citation databases, annual reports are also available. Possibility of accessing data sources by the audience increases confidence in such systems.

### 2.3.2 Processes

In spite of the fact that each ranking system involves different infrastructure and methodology, majority of these systems include the following processes;

- **Determination of Scope and Focus** As mentioned in 2.3.1, scope and focus definition forms the boundary of a system and plays a crucial role in preparation of the methodology. In order to specify these significant points, answers of the questions related to the below criteria should be clear:

  1. Geographical limits of the study (national, regional or global)
  2. The number of institutions to be included in the study
  3. Academic fields and/or subjects to be used in classification of the universities

- **Indicator Definition** Indicators are the components of a system that shape data collection and scoring phases of the study. Institutions which are being evaluated are ranked according to these criteria. According to the methodology, systems prefer to use single or multiple indicators. Indicators are weighted according to their importance.

- **Data Collection** After the determination of indicators, related data is collected according to the data source. This step can be done manually or using computer based crawling tools.

- **Scoring** The next step is the scoring of collected data according to weights of indicators. After this stage, results of the study take its final form.

- **Publishing** In the final stage, results of the study are shared with the community via different methods such as websites, scientific publications or annual reports.

### 2.3.3 Challenges

Other than the common processes described in the previous section, university ranking systems also share common challenges. In this section, potential difficulties faced by the systems are presented.

Objectivity is one of the most important points that affects reliability of the system. Because of this reason, indicators and related data source must be chosen carefully. Otherwise, the transparency of the system will be a matter of debate. The second important issue occurs in the stage of data collection. Unfortunately, authors of scientific publications use many alternative names while addressing their research outputs. This situation leads to serious problems, especially when collecting data from citation databases. Inadequate or outdated compilation of name alternatives of the institutions causes retrieval of missing data and affects the results of the study. To eliminate this problem, some operations on university name alternatives must be done according to the data source. These operations can be summarized as follows:

- Creating a list of abbreviations of the institutions,

- Determination of the name alternatives of institutions in different languages,

- Defining locational expressions to split universities having the same or similar names,

- Cancellation of unrelated name alternatives (hospitals or research centers in the same location)

Another challenge that is mostly encountered by these systems is the accuracy of data collection. Due to the large size of the data that the systems deal with, manual data collection may results in evaluation of the institutions according to missing data. In order to solve this problem, majority of these systems utilize automated data crawling tools.

## 2.4 Field and/or Subject Based Global Ranking Systems

As mentioned in the previous sections, the increase of interest in the university ranking systems and developments in fields of bibliography have led to the emergence of alternative systems. In this part of the study, current field and/or subject based global ranking systems will be examined in terms of their history, scope, focus, performance indicators and related data sources.

### 2.4.1 Academic Ranking of World Universities (ARWU)

Center for World-Class Universities was established by the Institute of Higher Education, Shanghai Jiao Tong University with the aim of detecting status of Chinese universities among world universities. With the publication of initial list by Center for World-Class Universities (the list a.k.a. ARWU) in June 2003, reputation of their system has increased expeditiously (Liu & Cheng, 2005).

- **Scope and Focus**

  Center for World-Class Universities ranks 1000 institutions around the world, having Nobel Laureates, Fields Medalists, Highly Cited Researchers, or publishing papers in Nature or Science Journals. However, only %50 of the selected institutions are announced in the ranking list. According to their methodology, ARWU announces overall performance of 500 universities and top 100 universities in Natural Sciences and Mathematics, Engineering / Technology and Computer Sciences, Life and Agriculture Sciences, Clinical Medicine and Pharmacy, Social Sciences. In addition to these cat-

egories, ARWU announces ranking of top 100 universities in certain subjects such as Mathematics, Physics, Chemistry, Computer Science, and Economics / Business.

- **Indicators**

  In ARWU, institutions are evaluated according to the following indicators (Shanghai Ranking Consultancy, 2010);

  **Alumni :** The number of graduates of a university awarded with a Nobel Prize or Field Medal. Data source: http://nobelprize.org/ and http://www.mathunion.org/medals/.

  **Award :** The number of faculty of a university awarded with Nobel Prize in Physics, Chemistry, Medicine and Economics and Fields Medal in Mathematics. Data source: http://nobelprize.org/ and http://www.mathunion.org/medals/.

  **HiCi (Highly Cited Researcher):** The number of highly cited researchers in the list published by http://www.isihighlycited.com.

  **N&S (Nature and Science Journals):** The number of articles published in Nature and Science Journals within last five years. Data source: http://www.isiknowledge.com.

  **PUB (Publication) :** The total number of articles and conference proceedings indexed in SCI-Expanded and SSCI in last year. Data Source: http://www.isiknowledge.com.

  **PCP (Per Capita Performance):** Calculated by dividing total number of full-time faculty in an institution to sum of all other indicator scores that are presented above. Data source: National agencies.

### 2.4.2 QS World University Rankings

The ranking was initially published in between 2004 and 2010, under the name of THE-QS World University Rankings by the collaboration of Quacquarelli Symonds and Times Higher Education. The system, with the end of partnership in 2010, was renamed to QS World University Rankings.

- **Scope and Focus** In 2010, QS World University Rankings (a.k.a. Top Universities) ranked 660 universities from 2500 institutions surveyed around the world and published overall performance of top 500 universities. Additionally, QS World University Rankings provides ranking of top 200 universities in 5 fields and 20 subject categories.

- **Indicators**

  QS World University Rankings evaluates institutions according to the 6 indicators (QS, 2011);

  **Academic Reputation Index:** This is the most debated indicator of the system. Evaluation data is based on expert opinions. Data source: Over 15.000 Academicians around the world.

  **Employer Review:** This indicator is similar to the previous one, expert group is composed of people who hires the graduates of the universities. Data source: Global companies.

  **Citations per Faculty:** It's calculated by dividing total number of citations to number of faculty members. Data source: Scopus, information provided by the institutions.

  **Student / Faculty Ratio:** The number of students per faculty. Data source: Information provided by the institutions.

  **International Faculty:** Ratio of foreign faculty members in all faculties. Data source: Information provided by the institutions.

  **International Students:** Ratio of foreign students in all students. Data source: Information provided by the institutions.

### 2.4.3 Times Higher Education World University Rankings

THE World University Rankings is a subsidiary of Times Higher Education Magazine - TSL Education Ltd., and published since 2010 with the contribution of Thomson Reuters. As it can be seen in the indicators section, the survey results (in other words the expert opinions) about the institutions being evaluated have a major impact on THE World University Rankings. This situation leads to criticism of the methodology.

- **Scope and Focus**

  Times Higher Education World University Rankings publishes overall performance of top 200 universities from 6 regions. In addition to this ranking, top 50 institutions in Engineering & Technology, Life sciences, Clinical, Pre-clinical & Health, Physical sciences, Social sciences, Arts & Humanities are also announced. The first time in

2011, ranking of top 100 universities by their reputation, based on a survey conducted with 13.000 experienced academics from 131 countries, was aso published.

- **Indicators**

  Times Higher Education World University Rankings groups 13 indicators in the following 5 groups (Baty, 2010);

  **Teaching:** This group consists of 5 indicators which are reputational survey on teaching, student/faculty ratio, rate of PhD and undergraduate students, number of PhD graduates and number of faculty members. Data Source: Academic Reputation Survey carried out by Thomson Reuters, expert opinions, information provided by the institutions.

  **Research:** With this indicator group, THE World University Rankings aims to determine research quality of an institution. This group includes the following indicators: expert opinions about the research fields in an institution, per-faculty research income of a university scaled to purchasing power, per-faculty research volume, ratio of public research income to total income. Data Source: Expert opinions, national agencies, information provided by the institutions.

  **Citations:** In order to measure research impact, THE World University Rankings uses total citation counts of the institutions. Data Source: Thomson Reuters.

  **Industry Income:** This indicator presents the knowledge transfer capacity of an institution from academia to industry. Data Source: Information provided by the institutions.

  **International Mix:** This group of indicators evaluates the globality of a university by measuring the ratio of international to domestic staff, and the rate of international students to domestic students.

### 2.4.4 HEEACT Performance Ranking of Scientific Papers for World Universities

The ranking is prepared and published since 2007 by Higher Education Evaluation and Accreditation Council of Taiwan to measure scientific paper performance of top 500 universities around the world. According to (Huang, 2007), this focus make this system more different from the others and indicators that measure current research performance increase the objectivity of the system.

- **Scope and Focus** HEAACT Performance Ranking of Scientific Papers selects and ranks 700 from 4000 institutions listed by Essential Science Indicators (ESI) and publishes overall performance of top 500 universities. In terms of categorization, system evaluates the same number of universities but announces top 300 in each 6 fields and 10 subject categories.

- **Indicators** The indicators included in HEEACT Performance Ranking of Scientific Papers for World Universities are presented in Table 2.2 (HEEACT, 2009).

Table 2.2: Indicators used by HEEACT Performance Ranking of Scientific Papers for World Universities

| Criteria | Performance Indicators | Weighting |
|---|---|---|
| Research productivity | Number of articles in the last 11 years | 10 |
| | Number of articles in the current year | 10 |
| Research impact | Number of citations in the last 11 year | 10 |
| | Number of citations in the last 2 years | 10 |
| | Average number of citations in the last 11 years | 10 |
| Research excellence | h-index of the last 2 years | 20 |
| | Number of Highly Cited Papers | 15 |
| | Number of articles of the current year in high-impact journals | 15 |

### 2.4.5 SCIMAGO Institutions Rankings (SIR)

SCIMAGO Institutions Ranking has been published since 2009 by SCIMAGO Reseacrh Group, a subsidiary of SCOPUS. This is the only ranking system developed by a citation database.

- **Scope and Focus**

  In 2011, 2.833 research institutions were evaluated by the SIR and the ranking list was published under the name of World Report $2^{nd}$ Edition. In this respect, SIR has a wider scope than the other ranking systems. Additionally, SIR announces ranking of 1.369 Ibero-American universities from 42 different countries.

- **Indicators** SCIMAGO Institutions Rankings uses 4 performance metrics to evaluate higher education institutions.

**Output:** The total number of documents published in scholarly journals. Data Source: Scopus.

**International Collaboration:** The ratio of researches conducted in collaboration with foreign institutions. Data Source: Scopus.

**Normalized Impact:** Measures the impact of an institution's research output by comparing the world average for the same subjects. Data Source: Scopus.

**High Quality Publication:** Ratio of the scientific documents published in scholarly journals with highest impact factors. Data Source: Scopus.

# CHAPTER 3

# Methodology

As it is mentioned in previous sections, current global university ranking systems have some disadvantages and weaknesses in terms of scope, objectivity of data sources used and preferred performance indicators.

There have been various systems developed and introduced to measure academic performance of world universities, however, none of these studies have applied multiple objective academic indicators to evaluate field or subject based academic performance of more than 500 institutions. This situation influences the systems adversely, because considerable amount of universities can not take a place in this studies. On the other hand, there have been some studies ranking world universities in a wider range using non-academic criteria. Webometrics Ranking of World Universities is the most well known study in this classification. It covers more than 20.000 higher education institutions around the world and ranks universities according to some web popularity metrics such as hugeness of search engine query results related with the domain name of the university, number of inlinks received from other sites, volume of reach files provided under the domain and Google Scholar search results. Second biggest study in this category is 4ICU and it ranks web popularity of 10.000 institutions in terms of Google Page Rank, Yahoo Inbound Links, Alexa Traffic Ranking. In addition to these studies, SCImago Institutions Ranking (SIR) publishes a ranking list of 2.833 research institutions using only one indicator that is the number of publications indexed by Scopus who is the developer of SIR. The 2011 European University Association (EUA) Report on global ranking systems also draws attention to this shortcoming and criticises that more than 16.000 of the world's universities have never been ranked in these studies (Rauhvargers, 2011).

Another issue which have been discussed widely about current ranking systems is the objec-

tivity and properness of the data sources. In point of fact, a reliable ranking system must use open data sources which will be accessible to all audience of the study. Therefore, systems that are ranking institutions based on unclear metrics such as survey responses come under heavy criticism.

Validity of indicators used by ranking systems have been another controversial point. It is crucial for a ranking system that chosen performance indicators must be applicable to all institutions in scope of the study. Size dependency is an obvious example of this situation and it should be taken into consideration while developing a ranking system.

In the light of above presented information and to lessen drawbacks of current ranking systems, a new framework has been designed in this study to evaluate field based academic performance of 2.000 higher education institutions those have never been ranked using multiple objective academic criteria.

## 3.1 Methodology

### 3.1.1 Aim and Scope Definition

The framework implemented in this study has been designed to evaluate 2000 higher education institutions around the world, in terms of their academic performance in 6 different research fields. The fields used in the evaluation of academic performance of institutions are as follows;

- Agriculture & Environmental Sciences (AGE)
- Clinical Medicine (MED)
- Engineering, Computing & Technology (ENG)
- Life Sciences (LIFE)
- Natural Sciences (SCI)
- Social Sciences (SOC)[1]

[1] Field of Arts & Humanities (AHCI) is included in Social Sciences (SOC).

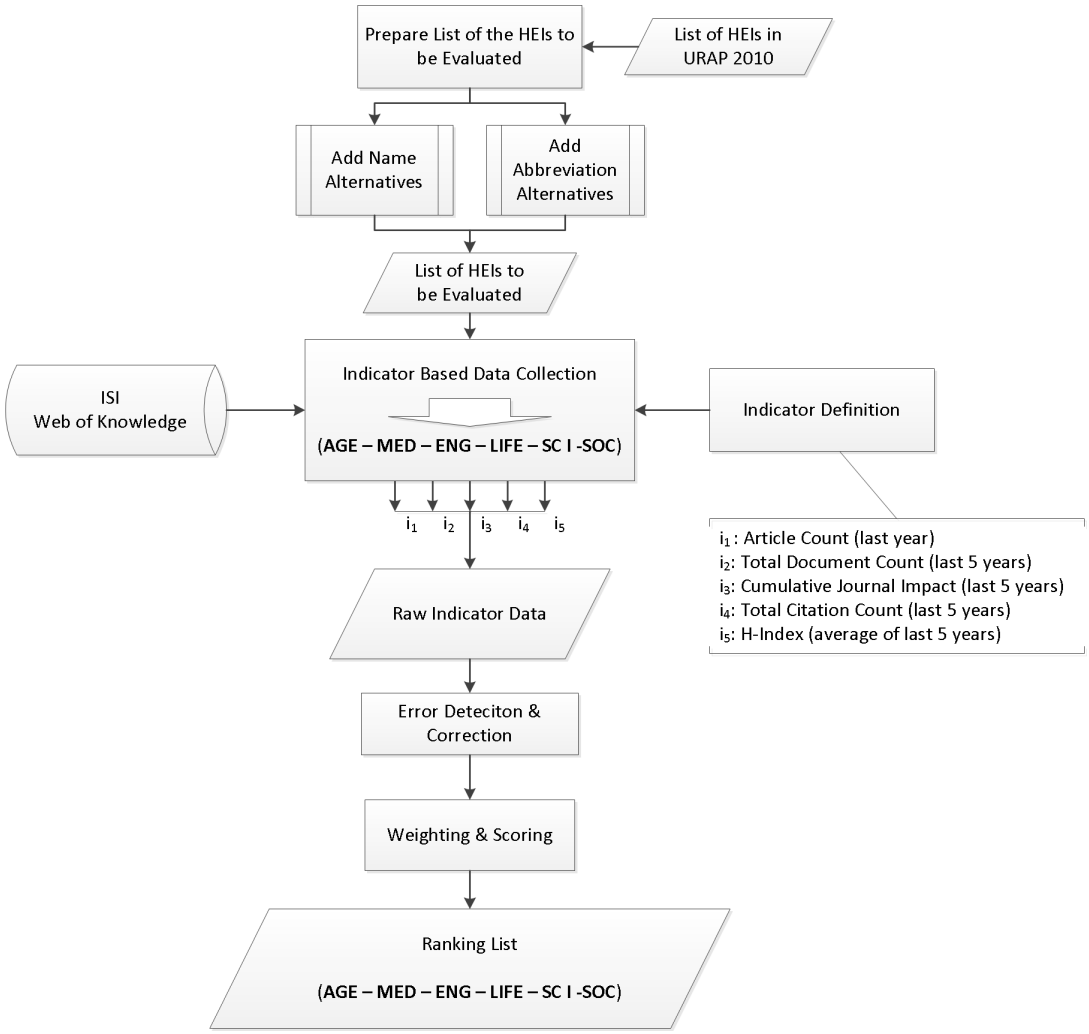



Figure 3.1: Workflow diagram of proposed framework.

The research fields that are given above are composed of 24 subject categories and corresponding 248 subjects. The full list of subjects, subject categories and related research fields are given in Appendix A.

The universities within the scope of this study were selected from the institutions, having largest number of articles indexed by ISI Web of Knowledge.

### 3.1.2 Indicator Definition

As mentioned in previous sections, university ranking systems use one or more indicators to rank institutions. According to the methodology, indicators included in these systems evaluate

different aspects of the universities, such as research impact, reputation, income, number of graduates etc.

In respect to the methodology of the framework implemented in this study, preferred indicators are used to evaluate the higher education institutions in terms of their academic performance. In this sense, many performance indicators have been tested in the development of this study. In the test period, each indicator was applied on a small group of universities. The consistency of test results has determined whether an indicator will be used in the system or not.

Consequently, indicators whose details are presented in the following sub-sections were selected to be used in the evaluation process of the institutions.

#### 3.1.2.1 Article Count

One of the quantitative indicators in this study is the number of articles indexed by SCI, SSCI and AHCI under the name of institution. In order to measure current scientific productivity of an institution, only previous year's article counts were taken into consideration.

#### 3.1.2.2 Total Document Count

It is a fact that document type of an academic output is varied between fields, even subject categories under the same field. In medical, science, and life categories, publishing an article is the most popular way of sharing result of a research. Contrary to this phenomenon, researchers in arts & humanities and social categories use different document types to share their findings such as letters, scripts, TV and radio reviews etc. In order to normalize these differences, number of total documents published by an institution within previous five years is used to measure continuing academic performance. Document types indexed by ISI - Web of Knowledge are listed in Table 3.1.

#### 3.1.2.3 Cumulative Journal Impact

One of the most significant current discussions in scientometrics is about measuring the research impact of an academic unit using qualitative and / or quantitative indicators. Journal

Table 3.1: Document types indexed by ISI.

| | |
|---|---|
| Article | Meeting Abstract |
| Art Exhibit Review | Meeting Summary |
| Bibliography | Meeting-Abstract |
| Biographical-Item | Music Performance Review |
| Book Review | Music Score |
| Chronology | Music Score Review |
| Correction | News Item |
| Correction, Addition | Note |
| Dance Performance Review | Poetry |
| Database Review | Proceedings Paper |
| Discussion | Record Review |
| Editorial Material | Reprint |
| Excerpt | Review |
| Fiction, Creative Prose | Script |
| Film Review | Software Review |
| Hardware Review | TV Review, Radio Review |
| Item About An Individual | TV Review, Radio Review, Video Review |
| Letter | Theatre Review |

Impact Total is designed to include both qualitative and quantitative metrics to measure an academic units' research impact. It is calculated by aggregating the multiplication of article count and impact factor of journals where the articles published. This calculation is based on data from the last five years.

Journal Impact Total is calculated with the following formula;

$$CJI = \sum_{i=0}^{n} (\text{Impact Factor of Journal } i) \times (\text{Number of Articles in Journal } i)$$

where;

n is the number of journals in which an academic unit published articles.

An example calculation of Cumulative Journal Impact of University X for one year is given in Table 3.2.

Table 3.2: Example calculation of Cumulative Journal Impact for University X for one year.

| **Journal** | **Impact Factor** | **Number of Articles** | **Journal Impact** |
|---|---|---|---|
| Journal A | 1 | 120 | 120 |
| Journal B | 4 | 5 | 20 |
| Journal C | 2.5 | 50 | 125 |
| Journal D | 3 | 10 | 30 |
| | | **Cumulative Journal Impact** | 295 |

#### 3.1.2.4 Citation Count

Citation count is one of the most used academic impact metrics in scientometrics. In this study, it is used to measure sustainability of the quality of an academic output and calculated by aggregating total citations received in previous year for the articles published within last five years. In order to increase the objectivity of this indicator, total citations counts were calculated after excluding self-citations. Table 3.3 indicates the calculation of citation count for Institution X for the year 2010.

Table 3.3: Example calculation of Citation Count for University X for the year 2010.

| **Year** | **Citation Count** |
|---|---|
| 2006 | 2000 |
| 2007 | 1800 |
| 2008 | 2400 |
| 2009 | 2250 |
| 2010 | 2500 |
| **TOTAL** | 10950 |

#### 3.1.2.5 H-Index

In this study, as indicated in section 2.2.5, H-Index was used to measure research impact of an institution. For a more robust result, average of the last 5 years' H-Index values were taken into consideration. In this context, average of H-Index values belong to the years 2006, 2007, 2008, 2009 and 2010 was included into scoring.

### 3.1.3 Data Collection

In order to collect required indicator data, the infrastructure used in URAP system have been updated for field based evaluation of the universities. With the purpose of eliminating human oriented errors, most of the data collection process have been done programmatically except the preparation of the institutions list. This problem will be discussed in the limitations section.

Details of phases and tools used in data collection phase are given in the following subsections.

#### 3.1.3.1 Tools

This part describes the tools used in data collection process.

- **Microsoft Excel with VBA**

  In this study, Microsoft Excel VBA was used as a programming environment and data storage tool. Dynamic scripts that automatizes web crawling tool were generated by Microsoft Excel VBA environment. The data obtained at the end of crawling process was also stored on Microsoft Excel.

- **Imacros Web Scripting Tool**

  Imacros Scripting Edition is a data extraction tool developed by iOpus Inc. that allows user to record and iterate repetitious jobs. The biggest advantage of the Imacros in terms of usability is that it's scripts can be embedded in a programming environment such as VBA or vb.NET. This provides a great benefit during the data collection and storage.

#### 3.1.3.2 Phases

In this part of the study, stages of data collection process will be discussed.

- **List of Institutions**

The list of institutions within the scope of this study was taken from URAP World 2010 ranking. In order to collect indicator data accurately, the list was updated by insertion of new name alternatives and abbreviations of the universities.

- **Indicator Based Data Collection**

  After obtaining the updated list of the universities, indicator based data collection process has been done in 6 fields. All of the indicator data was collected from ISI - Web of Knowledge programmatically by the help of technologies mentioned in section 3.1.3.1. In this phase, database search queries were generated by a software developed in Microsoft Excel VBA. Subsequently, embedded Imacros scripts for web automation in the software were run.

- **Error Detection and Correction**

  Even all of the required indicator data was collected programmatically, some errors encountered in the raw data. The main reasons of these errors are interruption of internet connectivity and problems caused by ISI - Web of Knowledge system. In case of an error, related piece of data was flagged according to type of the problem. Later on, the software scans all the data for flags and re-run the related scripts to collect missed data again.

### 3.1.4 Weighting & Scoring

The statistical tests presented in Chapter 4 shows that distribution of indicator data is not normal. Existence of outliers in the raw data makes linear scoring disadvantageous to rest of the universities. Because of this reason, scoring of all indicator values were calculated according to the median. In this sense, indicator values above and below the median are linearly scored in two groups. Maximum value of each indicator was scaled to 100 and weights of the indicators were arranged as follows;

## 3.2 Limitations

There have been some limitations in the data collection phase of the study. The sharpest encountered limitation in that phase was originated from constraints of ISI - Web of Knowledge.

Table 3.4: Weights of Indicators

| Indicator | Weight(%) |
|---|---|
| JIT | 18 |
| Article | 28 |
| Total Document | 13 |
| H-Index | 18 |
| Citation | 23 |

The system's citation report is limited for maximum 10.000 documents. In order to solve this problem, indicator values were collected for each year separately.

Another limitation encountered in data collection phase was the multitude of name alternatives of the institutions. In case of ignoring this problem, indicator data of the institutions can be collected incorrectly and this situation affects the ranking of universities directly. As an example, "Middle East Technical University" has lots of alternatives such as "METU", "Middle East Tech Univ", "ODTU" and "Orta Dogu Teknik Universitesi". In order to overcome this problem 11 alternative names and abbreviations of the institutions were included into the query strings.

The similarity between institution names is another key-point in data collection phase. This problem was solved by taking location information of the institution into account. City or country names where the universities located were included into the query strings.

# CHAPTER 4

# STATISTICAL ANALYSIS & RESULTS

This section of the study consists of two parts. In the first part, descriptive statistical analysis of raw indicator data is presented to demonstrate the variation of indicators between the fields. The last part involves a benchmarking analysis that presents the status of evaluated institutions in terms of overall and field based academic performance.

## 4.1 Descriptive Statistics & Analysis

Firstly in this sub-section, descriptive statistics of collected data is presented to summarize quantitative features of each indicator. In order to describe main characteristics of the data ideally, they were grouped within 6 field categories.

Descriptive statistical analysis given in Tables 4.1 to 4.6 clearly demonstrates the differences between fields according to the indicators used in this study. According to the analysis, average journal impact total value of AGE is 472.52 where the same indicator values in MED, ENG, LIFE, SCI and SOC are 1938.36, 643.50, 1999.75, 3001.82, 300.99, respectively. This difference is directly related to the number of articles produced in the field and impact factors of the journals where the articles published. From the point of average article counts published in each field, AGE spearheads with 319.47. Besides, average article counts of MED, ENG, LIFE, SCI and SOC are 122.53, 88.63, 115.22, 220.38, 62.61, respectively. The variation between these two indicators clearly indicates the diversity of journal impact factors in different fields. In terms of total document count per institution, another indicator of scientific productivity, SCI takes the first place with 1258.63 and MED, ENG, LIFE, SOC, AGE follow it with 910.18, 822.47, 705.19, 396.81 and 235.84, respectively.

Table 4.1: Descriptive statistics of AGE raw indicator data.

| | N | Range | Min | Max | Mean | | Median | Std. Dev. | Variance | Skewness | Kurtosis | Kolmogorov-Smirnova | | Shapiro-Wilk | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Err. | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Sig. | Statistic | Sig. |
| Journal Impact Total | 2000 | 10262.92 | 0.00 | 10262.92 | 472.52 | 18.45 | 164.65 | 825.08 | 680761.24 | 4.06 | 24.39 | .283 | .000 | .564 | .000 |
| Article Count | 2000 | 6909.50 | 0.00 | 6909.50 | 319.47 | 12.37 | 123.80 | 553.29 | 306128.55 | 4.54 | 31.70 | .282 | .000 | .551 | .000 |
| Total Document | 2000 | 5692.33 | 0.00 | 5692.33 | 235.84 | 9.88 | 82.08 | 441.80 | 195185.68 | 4.94 | 36.44 | .297 | .000 | .515 | .000 |
| H-Index | 2000 | 26.00 | 0.00 | 26.00 | 6.46 | 0.10 | 5.40 | 4.66 | 21.68 | 1.01 | 0.74 | .099 | .000 | .926 | .000 |
| Citation Count | 2000 | 10774.00 | 0.00 | 10774.00 | 520.97 | 20.16 | 184.00 | 901.47 | 812647.02 | 3.87 | 21.71 | .282 | .000 | .573 | .000 |



Table 4.2: Descriptive statistics of MED raw indicator data.

| | N | Range | Min | Max | Mean | | Median | Std. Dev. | Variance | Skewness | Kurtosis | Kolmogorov-Smirnova | | Shapiro-Wilk | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Err. | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Sig. | Statistic | Sig. |
| Journal Impact Total | 2000 | 107867.58 | 0.00 | 107867.58 | 1938.36 | 117.60 | 205.38 | 5259.27 | 27659907.85 | 7.54 | 101.64 | .356 | .000 | .564 | .000 |
| Article Count | 2000 | 3609.08 | 0.00 | 3609.08 | 122.53 | 5.69 | 21.62 | 254.54 | 64789.16 | 4.38 | 30.57 | .315 | .000 | .551 | .000 |
| Total Document | 2000 | 27704.33 | 0.00 | 27704.33 | 910.18 | 44.57 | 148.71 | 1993.29 | 3973211.57 | 4.64 | 32.78 | .324 | .000 | .515 | .000 |
| H-Index | 2000 | 74.80 | 0.00 | 74.80 | 8.60 | 0.21 | 5.20 | 9.47 | 89.59 | 1.99 | 4.86 | .182 | .000 | .926 | .000 |
| Citation Count | 2000 | 84715.00 | 0.00 | 84715.00 | 1625.58 | 99.17 | 180.00 | 4435.17 | 19670752.30 | 6.94 | 81.97 | .357 | .000 | .573 | .000 |

Table 4.3: Descriptive statistics of ENG raw indicator data.

| | N | Range | Min | Max | Mean | | Median | Std. Dev. | Variance | Skewness | Kurtosis | Kolmogorov-Smirnova | | Shapiro-Wilk | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Err. | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Sig. | Statistic | Sig. |
| Journal Impact Total | 2000 | 11048.32 | 0.00 | 11048.32 | 643.50 | 24.79 | 242.15 | 1108.74 | 1229293.33 | 3.86 | 19.94 | .281 | .000 | .567 | .000 |
| Article Count | 2000 | 1510.83 | 0.00 | 1510.83 | 88.63 | 3.13 | 36.75 | 140.16 | 19644.96 | 3.58 | 18.26 | .264 | .000 | .609 | .000 |
| Total Document | 2000 | 13616.00 | 0.00 | 13616.00 | 822.47 | 28.55 | 346.50 | 1277.00 | 1630736.84 | 3.35 | 15.97 | .260 | .000 | .626 | .000 |
| H-Index | 2000 | 35.80 | 0.00 | 35.80 | 7.44 | 0.12 | 6.40 | 5.35 | 28.57 | 1.24 | 2.02 | .095 | .000 | .913 | .000 |
| Citation Count | 2000 | 13563.00 | 0.00 | 13563.00 | 730.16 | 29.93 | 258.50 | 1338.46 | 1791469.80 | 4.18 | 23.57 | .293 | .000 | .538 | .000 |



Table 4.4: Descriptive statistics of LIFE raw indicator data.

| | N | Range | Min | Max | Mean | | Median | Std. Dev. | Variance | Skewness | Kurtosis | Kolmogorov-Smirnova | | Shapiro-Wilk | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Err. | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Sig. | Statistic | Sig. |
| Journal Impact Total | 2000 | 91841.35 | 0.00 | 91841.35 | 1999.75 | 103.73 | 425.57 | 4638.98 | 21520147.39 | 6.75 | 84.55 | .333 | .000 | .434 | .000 |
| Article Count | 2000 | 3014.25 | 0.00 | 3014.25 | 115.22 | 4.60 | 37.71 | 205.53 | 42243.01 | 4.25 | 30.48 | .288 | .000 | .559 | .000 |
| Total Document | 2000 | 18851.33 | 0.00 | 18851.33 | 705.19 | 29.28 | 205.63 | 1309.56 | 1714935.87 | 4.32 | 30.28 | .295 | .000 | .542 | .000 |
| H-Index | 2000 | 82.00 | 0.00 | 82.00 | 10.20 | 0.20 | 7.80 | 8.83 | 77.96 | 1.86 | 5.29 | .127 | .000 | .842 | .000 |
| Citation Count | 2000 | 81560.00 | 0.00 | 81560.00 | 1733.19 | 91.64 | 364.00 | 4098.48 | 16797545.34 | 6.88 | 86.83 | .336 | .000 | .425 | .000 |

Table 4.5: Descriptive statistics of SCI raw indicator data.

| | N | Range | Min | Max | Mean | | Median | Std. Dev. | Variance | Skewness | Kurtosis | Kolmogorov-Smirnova | | Shapiro-Wilk | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Err. | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Sig. | Statistic | Sig. |
| Journal Impact Total | 2000 | 64920.34 | 1.04 | 64921.38 | 3001.82 | 128.40 | 875.65 | 5742.41 | 32975216.14 | 4.45 | 28.58 | .301 | .000 | .522 | .000 |
| Article Count | 2000 | 2994.00 | 0.00 | 2994.00 | 220.39 | 7.21 | 93.63 | 322.32 | 103890.99 | 3.07 | 12.65 | .247 | .000 | .646 | .000 |
| Total Document | 2000 | 18940.92 | 0.83 | 18941.75 | 1258.63 | 41.61 | 536.33 | 1861.04 | 3463454.88 | 3.21 | 14.41 | .250 | .000 | .640 | .000 |
| H-Index | 2000 | 79.40 | 0.00 | 79.40 | 12.98 | 0.22 | 10.20 | 9.86 | 97.21 | 1.76 | 4.31 | .140 | .000 | .849 | .000 |
| Citation Count | 2000 | 62380.00 | 0.00 | 62380.00 | 2478.88 | 110.21 | 710.50 | 4928.71 | 24292153.27 | 4.89 | 35.22 | .308 | .000 | .498 | .000 |



Table 4.6: Descriptive statistics of SOC raw indicator data.

| | N | Range | Min | Max | Mean | | Median | Std. Dev. | Variance | Skewness | Kurtosis | Kolmogorov-Smirnova | | Shapiro-Wilk | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Err. | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Sig. | Statistic | Sig. |
| Journal Impact Total | 2000 | 11524.75 | 0.00 | 11524.75 | 300.99 | 15.09 | 79.10 | 674.70 | 455219.08 | 5.88 | 56.80 | .328 | .000 | .445 | .000 |
| Article Count | 2000 | 1259.25 | 0.00 | 1259.25 | 62.61 | 2.44 | 22.50 | 109.13 | 11909.21 | 3.69 | 18.87 | .283 | .000 | .574 | .000 |
| Total Document | 2000 | 7627.84 | 0.00 | 7627.84 | 396.81 | 15.44 | 148.96 | 690.53 | 476826.66 | 3.65 | 17.63 | .283 | .000 | .570 | .000 |
| H-Index | 2000 | 29.60 | 0.00 | 29.60 | 4.48 | 0.09 | 3.40 | 3.86 | 14.88 | 1.56 | 3.13 | .133 | .000 | .867 | .000 |
| Citation Count | 2000 | 13891.00 | 0.00 | 13891.00 | 326.71 | 17.14 | 78.00 | 766.44 | 587431.77 | 6.38 | 68.65 | .335 | .000 | .426 | .000 |

However, when the highest values of total document counts are analyzed for each field, it has been seen that MED with 27704.33 documents gets ahead of SCI that it has 18941.75 scientific documents. Scattered indicator values of the universities cause such a situation so that Kurtosis rates presented in descriptive statistics tables confirm this claim.

Furthermore, descriptive analysis of the data gives an idea about the citation behaviours of the fields. Average H-Index values of the fields show that, 12.98 articles were cited at least 12.98 times in SCI. On the other hand, average H-Index value of the SOC is 4.48 and this variation between two fields is evident when the data is analyzed from the point of mean value of total citations.

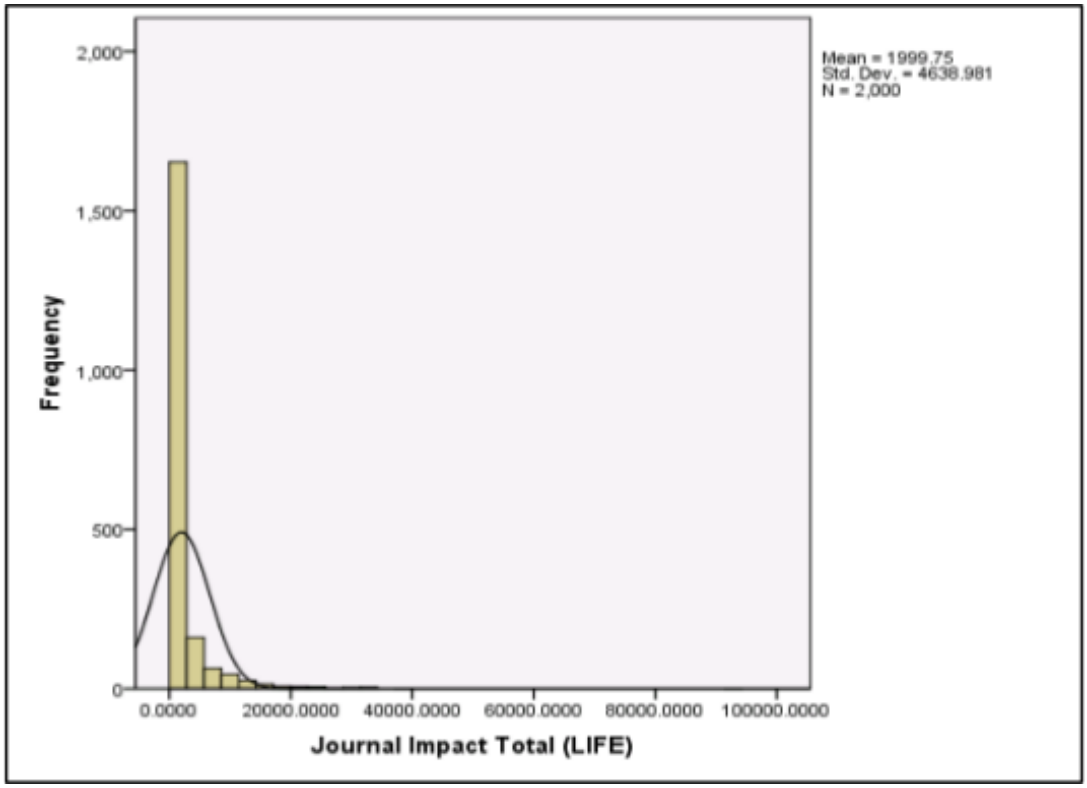



Figure 4.1: Histogram of JIT raw indicator data.

Normality tests are other key-points that describes the characteristics of the data. Results of Kolmogorov-Smirnov and Shapiro-Wilk tests show that distribution of any data group is not normal. In order to demonstrate right skewed pattern of the data, Figure 4.1 and 4.2 presents samples that show histogram of JIT in LIFE and detrended normal Q-Q plot of the same data group. This situation has played a crucial role on determination of the scoring method. Existence of outliers in data sets resulted in usage of median values while scoring

the indicators.

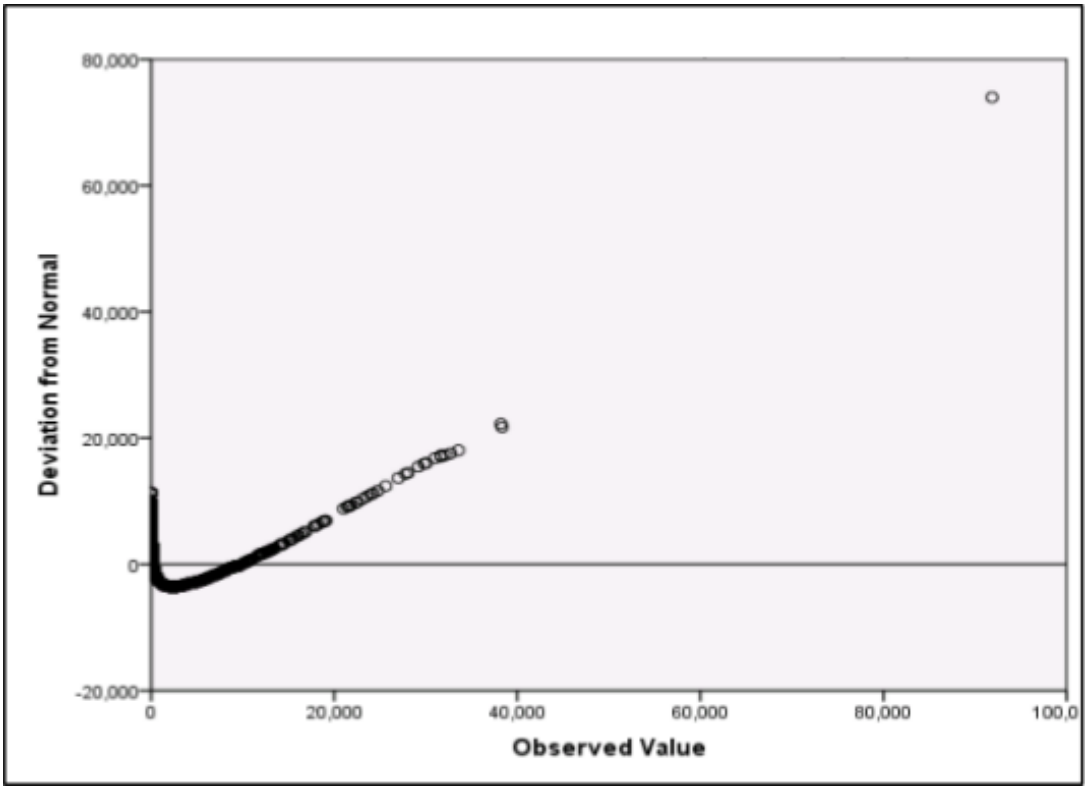



Figure 4.2: Detrended normal Q-Q plot of JIT raw indicator data.

According to Figure 4.2, Harvard University takes the first place with 91841.35 and University of California San Francisco follows it with 38332.04. Such differences make the usage of median values in scoring more meaningful.

Differences between fields in terms of highest indicator values can be seen clearly in Figures 4.3 to 4.12. In these figures, highest indicator values and ranking of universities according to that indicators are presented. It is obviously seen that MED has the highest indicator values except H-Index. From the point of AGE, it shows minimum performance in terms of quantitative values of the indicators. These findings claim that evaluation of universities according to the overall performance criteria gives missing information about the institutions.

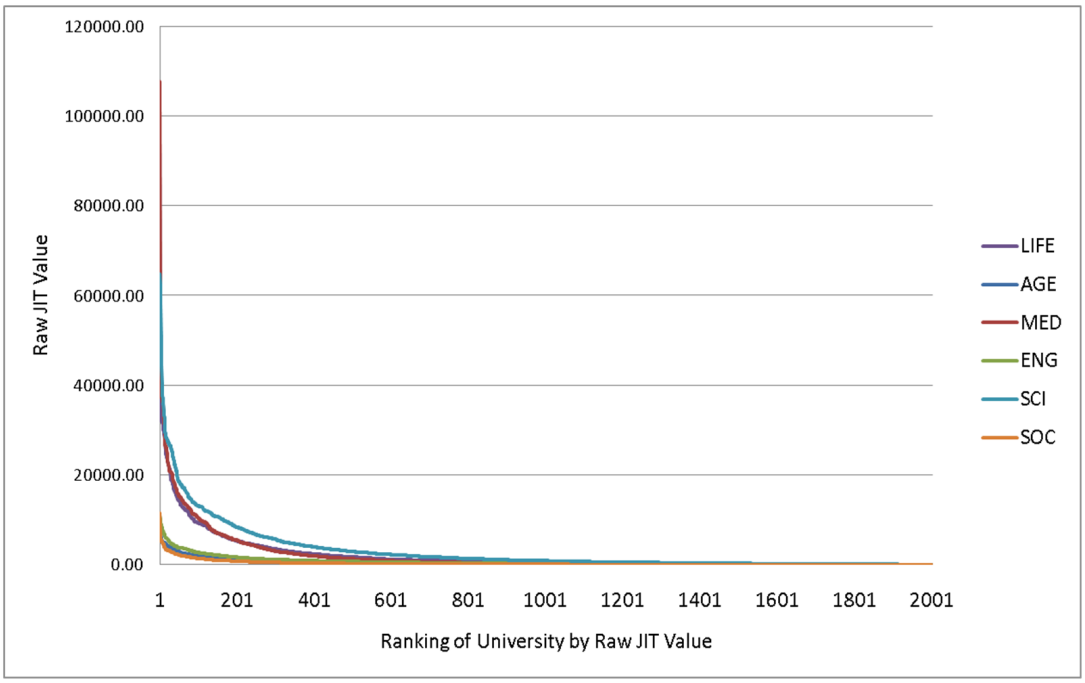
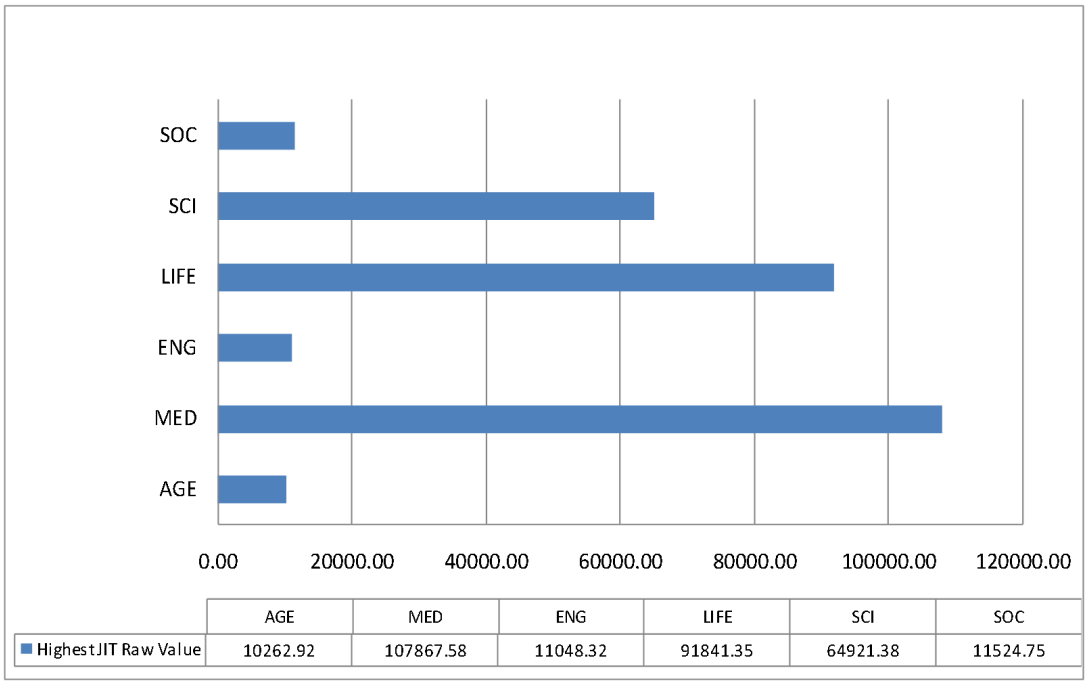



Figure 4.3: Distribution of raw JIT data with respect to fields.




| | AGE | MED | ENG | LIFE | SCI | SOC |
|---|---|---|---|---|---|---|
| Highest JIT Raw Value | 10262.92 | 107867.58 | 11048.32 | 91841.35 | 64921.38 | 11524.75 |

Figure 4.4: Highest JIT values in fields.

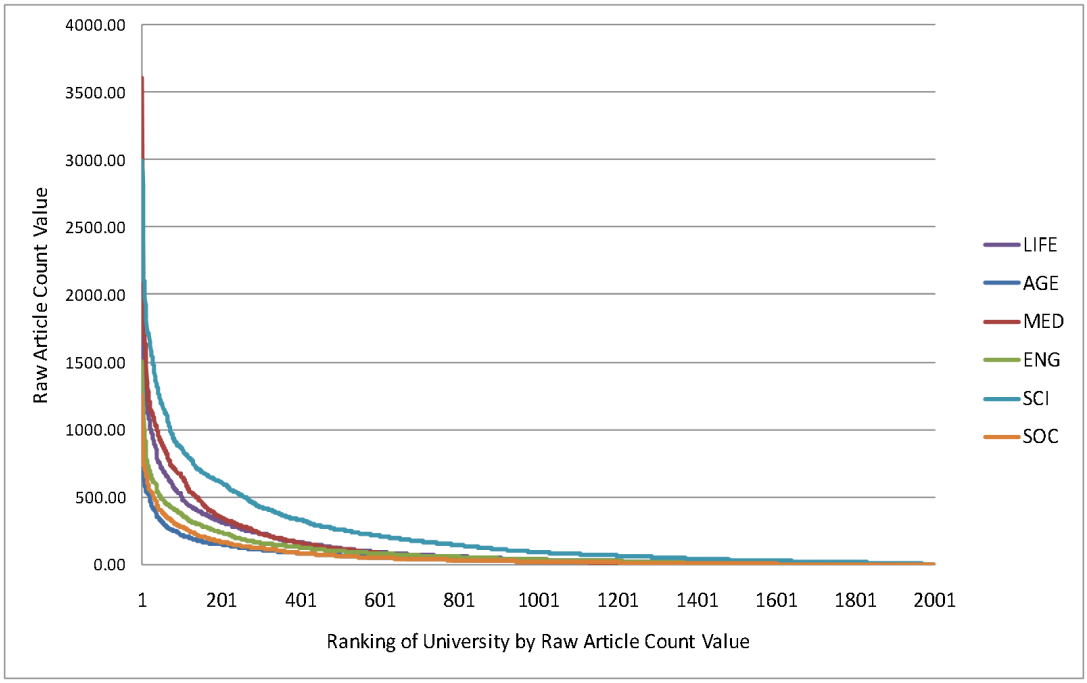
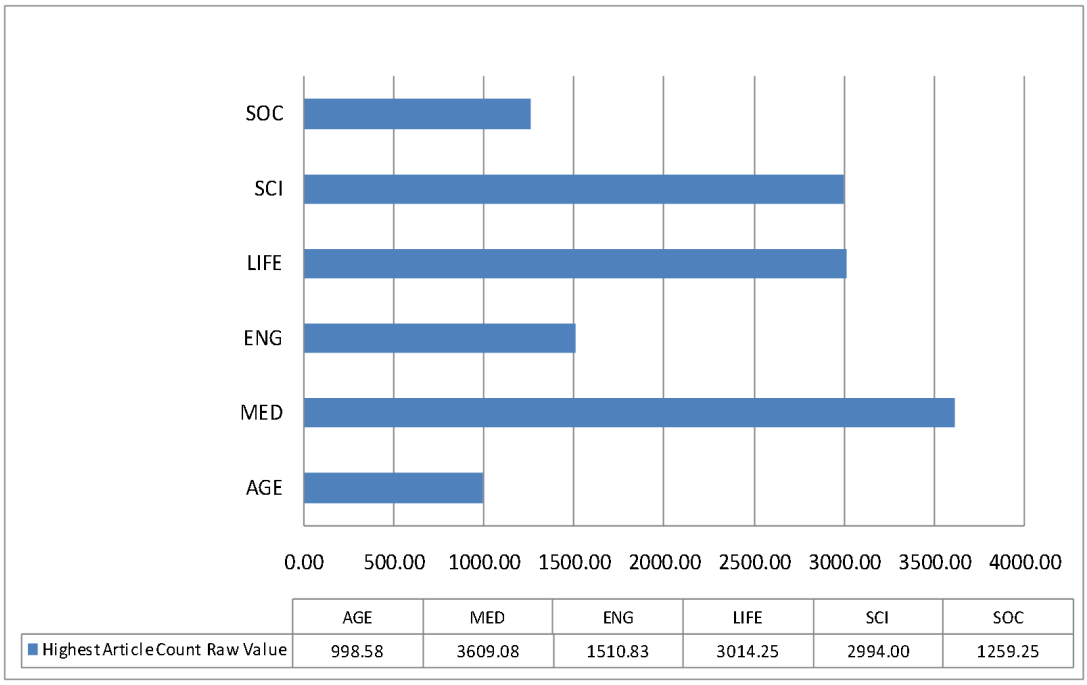



Figure 4.5: Distribution of raw Article Count data with respect to fields.




| | AGE | MED | ENG | LIFE | SCI | SOC |
|---|---|---|---|---|---|---|
| Highest Article Count Raw Value | 998.58 | 3609.08 | 1510.83 | 3014.25 | 2994.00 | 1259.25 |

Figure 4.6: Highest Article Count values in fields.

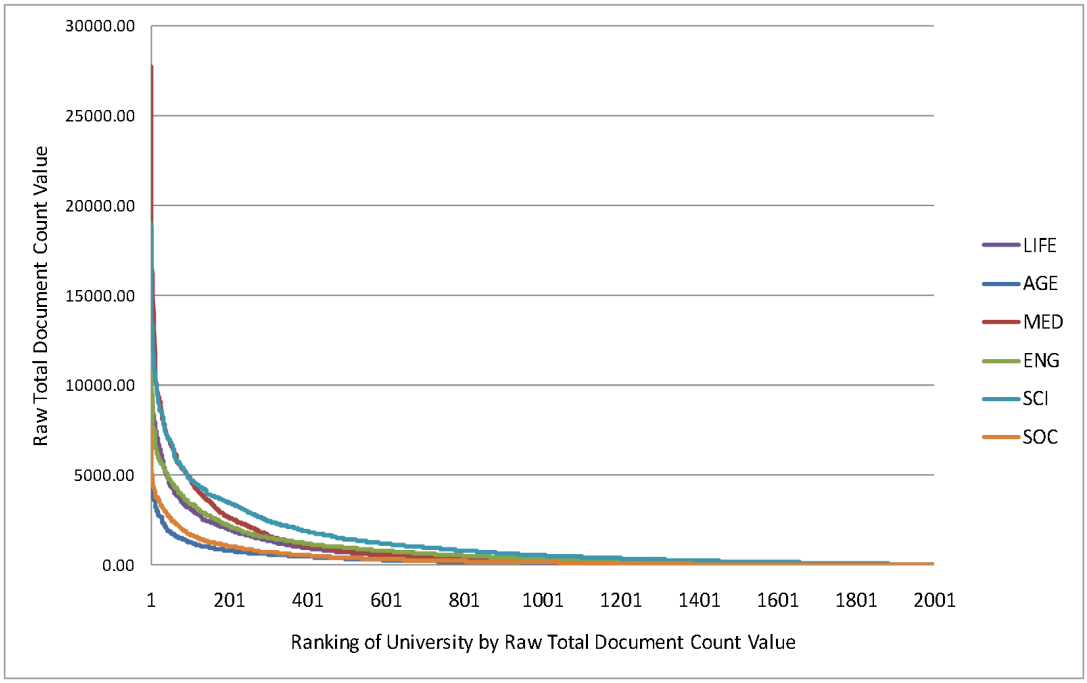
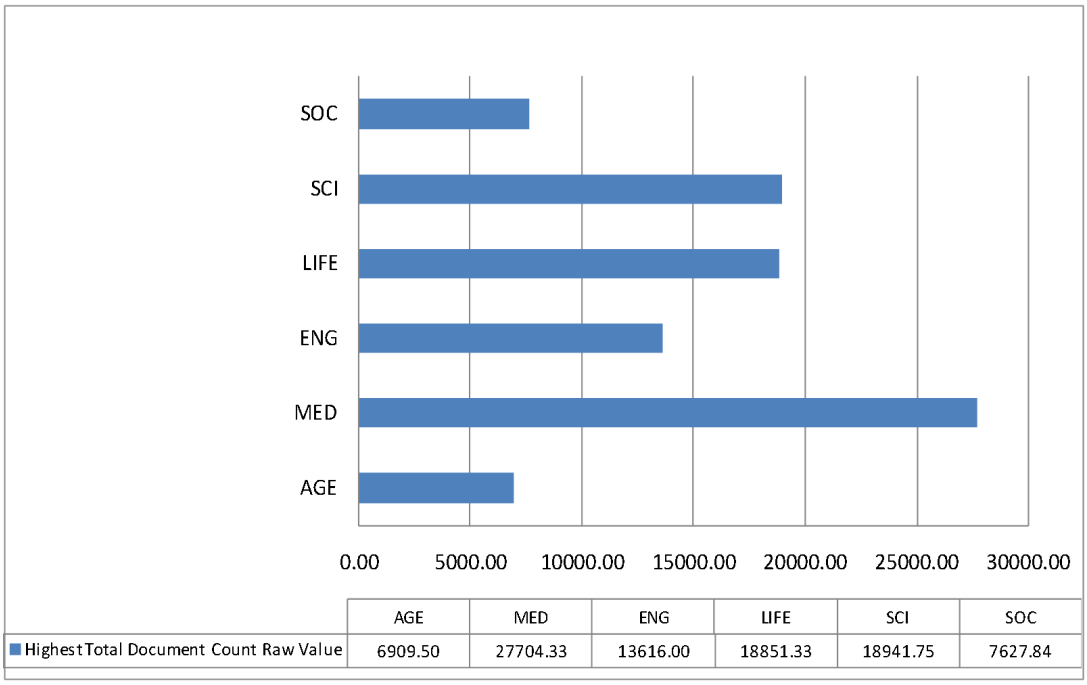



Figure 4.7: Distribution of raw Total Document Count data with respect to fields.




| | AGE | MED | ENG | LIFE | SCI | SOC |
|---|---|---|---|---|---|---|
| Highest Total Document Count Raw Value | 6909.50 | 27704.33 | 13616.00 | 18851.33 | 18941.75 | 7627.84 |

Figure 4.8: Highest Total Document Count values in fields.

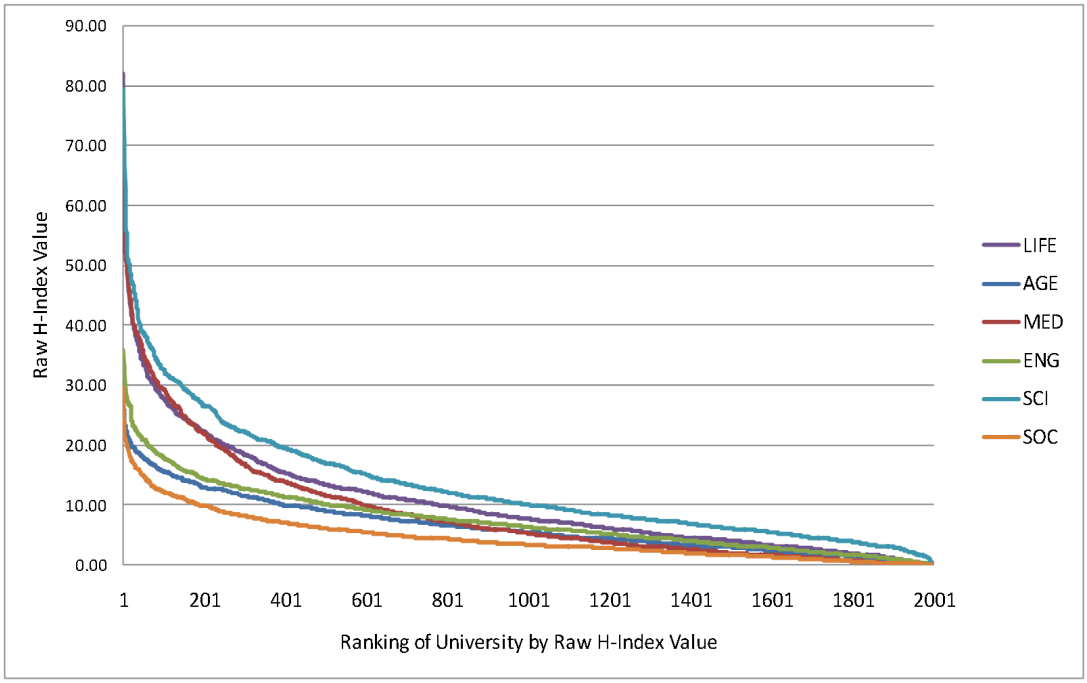
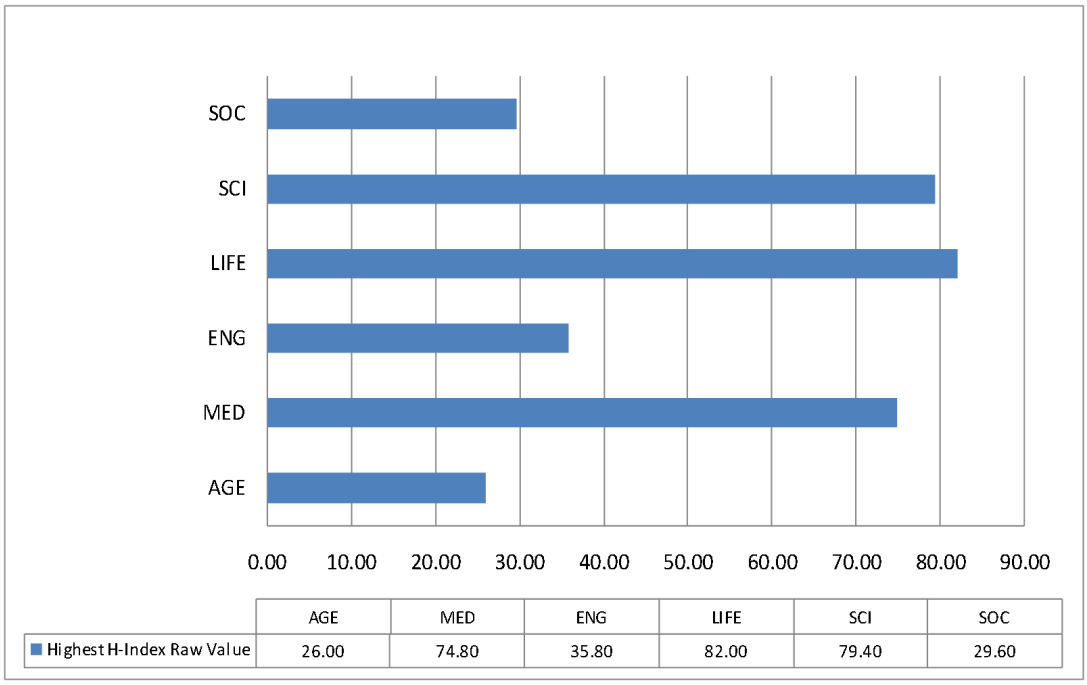



Figure 4.9: Distribution of raw H-Index data with respect to fields.




| | AGE | MED | ENG | LIFE | SCI | SOC |
|---|---|---|---|---|---|---|
| Highest H-Index Raw Value | 26.00 | 74.80 | 35.80 | 82.00 | 79.40 | 29.60 |

Figure 4.10: Highest H-Index values in fields.

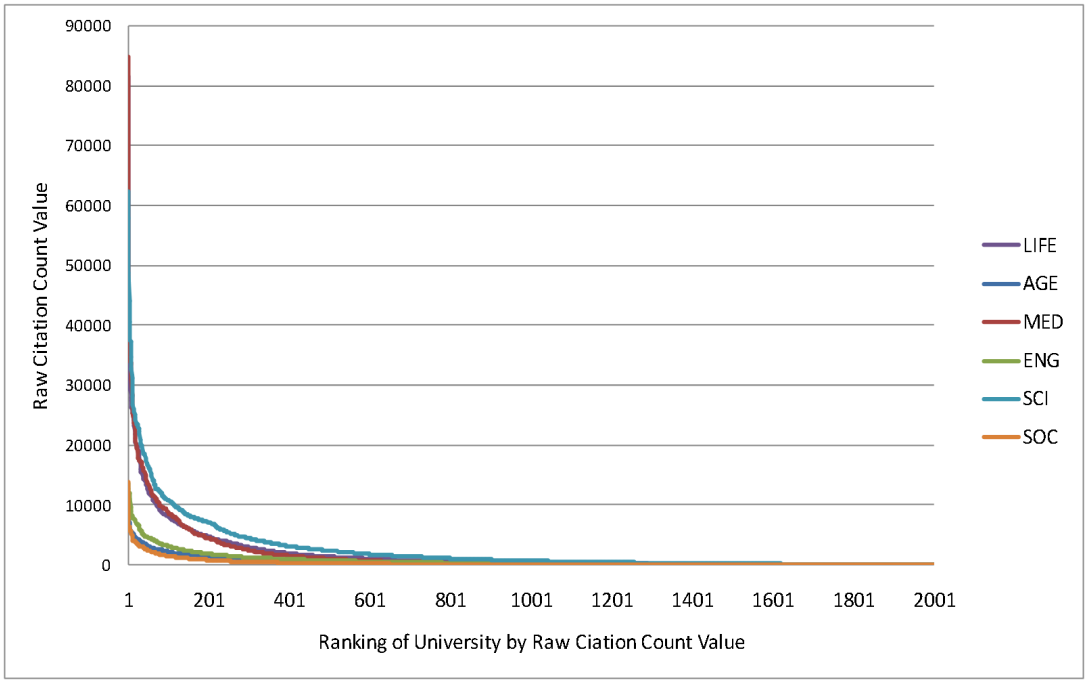



Figure 4.11: Distribution of raw Total Citation Count data with respect to fields.

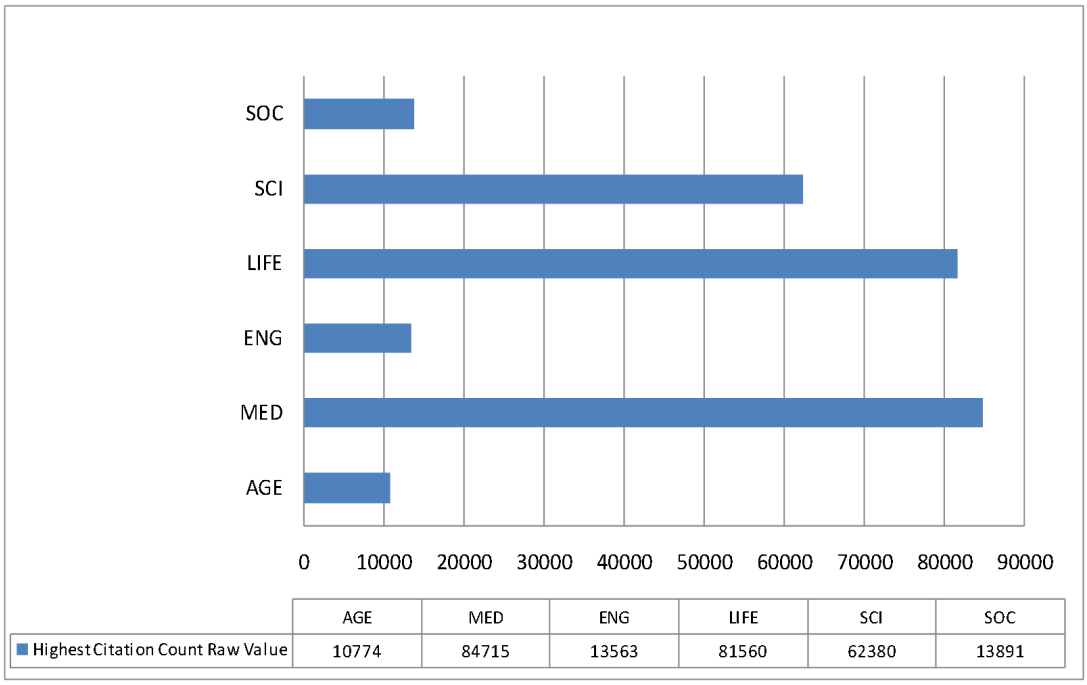



Figure 4.12: Highest Total Citation Count values in fields.

## 4.2 Comparison of the Results with URAP World 2010

In order to view benchmarking of the results, top 10 universities from each category are compared with their rankings in URAP World 2010. During the comparison, Spearman's rank order correlation coefficient ($\rho$) was used to indicate correlations between these two rankings. According to the definition of Spearman's coefficient, correlation of +1 or -1 occurs when each of the variables match others perfectly.

Table 4.7: List of Top 10 universities in AGE and their status in URAP World 2010.

| **University** | **AGE** | **URAP World** |
|---|---|---|
| University of California Davis | 1 | 29 |
| University of Florida | 2 | 34 |
| Cornell University | 3 | 21 |
| University of Wisconsin Madison | 4 | 23 |
| University of California Berkeley | 5 | 6 |
| University of Georgia | 6 | 170 |
| Michigan State University | 7 | 90 |
| Universidade de Sao Paulo | 8 | 37 |
| Ghent University | 9 | 95 |
| University of Queensland | 10 | 59 |

Table 4.7 presents the list of top 10 universities in AGE field based ranking and their status in URAP World 2010.

Table 4.8: Results of Spearman's rank order correlation for AGE ranking and URAP World 2010.

| | | | AGE | URAP |
|---|---|---|---|---|
| Spearman's rho | AGE | Correlation Coefficient | 1.000 | .600 |
| | | Sig. (2-tailed) | . | .067 |
| | | N | 10 | 10 |
| | URAP | Correlation Coefficient | .600 | 1.000 |
| | | Sig. (2-tailed) | .067 | . |
| | | N | 10 | 10 |

According to Table 4.8, $\rho$ of these two rankings is 0.60, so there is no significant correlation between them. University of Georgia is a good example for this result, its performance growth in AGE field is conspicuous.

The same situation is valid for ranking of universities in field of MED. Table 4.9 presents the

Table 4.9: List of Top 10 universities in MED and their status in URAP World 2010.

| **University** | **MED** | **URAP World** |
|---|---|---|
| Harvard University | 1 | 1 |
| Johns Hopkins University | 2 | 2 |
| University of California San Francisco | 3 | 18 |
| University of Toronto | 4 | 3 |
| University of Pennsylvania | 5 | 12 |
| University of Pittsburgh | 6 | 25 |
| University of Washington Seattle | 7 | 5 |
| University of California Los Angeles | 8 | 7 |
| University of Michigan Ann Arbor | 9 | 9 |
| Duke University | 10 | 19 |

Table 4.10: Results of Spearman's rank order correlation for MED ranking and URAP World 2010.

| | | | MED | URAP |
|---|---|---|---|---|
| Spearman's rho | MED | Correlation Coefficient | 1.000 | .552 |
| | | Sig. (2-tailed) | . | .098 |
| | | N | 10 | 10 |
| | URAP | Correlation Coefficient | .552 | 1.000 |
| | | Sig. (2-tailed) | .098 | . |
| | | N | 10 | 10 |

list of top 10 universities in MED field and their rankings in URAP. According to Table 4.10, $\rho$ of these two rankings is 0.55, so there is no significant correlation between these two.

Table 4.11: List of Top 10 universities in ENG and their status in URAP World 2010.

| **University** | **ENG** | **URAP World** |
|---|---|---|
| Tsinghua University China | 1 | 81 |
| National University of Singapore | 2 | 49 |
| University of California Berkeley | 3 | 6 |
| Massachusetts Institute of Technology | 4 | 13 |
| Nanyang Technological University | 5 | 150 |
| Georgia Institute of Technology | 6 | 124 |
| Zhejiang University | 7 | 66 |
| Shanghai Jiao Tong University | 8 | 105 |
| Harbin Institute of Technology | 9 | 263 |
| Stanford University | 10 | 4 |

When the results are analyzed in terms of ENG vs URAP World 2010, its clearly seen that Tsinghua University China and National University of Singapore are dominant in the field

Table 4.12: Results of Spearman's rank order correlation for ENG ranking and URAP World 2010.

| | | | ENG | URAP |
|---|---|---|---|---|
| Spearman's rho | ENG | Correlation Coefficient | 1.000 | .164 |
| | | Sig. (2-tailed) | . | .651 |
| | | N | 10 | 10 |
| | URAP | Correlation Coefficient | .164 | 1.000 |
| | | Sig. (2-tailed) | .651 | . |
| | | N | 10 | 10 |

of engineering. Table 4.12 indicates that $\rho$ of these two rankings is 0.164, so there is no significant correlation between two rankings.

Table 4.13: List of Top 10 universities in LIFE and their status in URAP World 2010.

| **University** | **LIFE** | **URAP World** |
|---|---|---|
| Tsinghua University China | 1 | 81 |
| National University of Singapore | 2 | 49 |
| University of California Berkeley | 3 | 6 |
| Massachusetts Institute of Technology | 4 | 13 |
| Nanyang Technological University | 5 | 150 |
| Georgia Institute of Technology | 6 | 124 |
| Zhejiang University | 7 | 66 |
| Shanghai Jiao Tong University | 8 | 105 |
| Harbin Institute of Technology | 9 | 263 |
| Stanford University | 10 | 4 |

Table 4.14: Results of Spearman's rank order correlation for LIFE ranking and URAP World 2010.

| | | | LIFE | URAP |
|---|---|---|---|---|
| Spearman's rho | LIFE | Correlation Coefficient | 1.000 | .413 |
| | | Sig. (2-tailed) | . | .235 |
| | | N | 10 | 10 |
| | URAP | Correlation Coefficient | .413 | 1.000 |
| | | Sig. (2-tailed) | .235 | . |
| | | N | 10 | 10 |

List of top 10 universities in LIFE field ranking and their status in URAP World 2010 is presented in Table 4.13. Table 4.14 shows that correlation of these two rankings is 0.41. It is not possible say that there is a match between two rankings.

Table 4.15: List of Top 10 universities in SCI and their status in URAP World 2010.

| **University** | **SCI** | **URAP World** |
|---|---|---|
| University of California Berkeley | 1 | 6 |
| Harvard University | 2 | 1 |
| University of Tokyo | 3 | 10 |
| Massachusetts Institute of Technology | 4 | 13 |
| California Institute of Technology Caltech | 5 | 41 |
| Stanford University | 6 | 4 |
| University of Cambridge | 7 | 11 |
| University of Oxford | 8 | 8 |
| Kyoto University | 9 | 26 |
| University of California Los Angeles | 10 | 7 |

Table 4.16: Results of Spearman's rank order correlation for SCI ranking and URAP World 2010.

| | | | SCI | URAP |
|---|---|---|---|---|
| Spearman's rho | SCI | Correlation Coefficient | 1.000 | .297 |
| | | Sig. (2-tailed) | . | .405 |
| | | N | 10 | 10 |
| | URAP | Correlation Coefficient | .297 | 1.000 |
| | | Sig. (2-tailed) | .405 | . |
| | | N | 10 | 10 |

Comparison of the same universities in terms of academic performance rankings in SCI and URAP World 2010 shows that correlation coefficient of two lists is 0.297. This result also shows the difference between field based and overall academic performances of the universities.

Table 4.17: List of Top 10 universities in SOC and their status in URAP World 2010.

| **University** | **SOC** | **URAP World** |
|---|---|---|
| Harvard University | 1 | 1 |
| University of Michigan Ann Arbor | 2 | 9 |
| Columbia University New York | 3 | 14 |
| University of North Carolina Chapel Hill | 4 | 31 |
| University of Toronto | 5 | 3 |
| University of Washington Seattle | 6 | 5 |
| University of California Los Angeles | 7 | 7 |
| University of Pennsylvania | 8 | 12 |
| University of California Berkeley | 9 | 6 |
| Johns Hopkins University | 10 | 2 |

Table 4.18: Results of Spearman's rank order correlation for SOC ranking and URAP World 2010.

| | | | SOC | URAP |
|---|---|---|---|---|
| Spearman's rho | SOC | Correlation Coefficient | 1.000 | -.127 |
| | | Sig. (2-tailed) | . | .726 |
| | | N | 10 | 10 |
| | URAP | Correlation Coefficient | -.127 | 1.000 |
| | | Sig. (2-tailed) | .726 | . |
| | | N | 10 | 10 |

The same difference is valid for ranking of universities in field of SOC. Table 4.17 presents the list of top 10 universities in SOC and their rankings in URAP World 2010. According to Table 4.18, $\rho$ of these two rankings is -0.127.

Above tables and statistical tests show that academic performances of the universities show variations according to the fields.

Ranking lists of top 100 universities in each field are given in Appendix B. Full lists containing ranking of 2000 universities in each field are available as a pdf document separately in a compact disc media.

# CHAPTER 5

# CONCLUSIONS AND FUTURE WORK

This chapter of the study is composed of two sections. In the first section, results of implemented framework will be discussed. In the following part, future work of the study will be mentioned.

## 5.1 Conclusions of the Results

The main assertion of this study is to demonstrate that academic performances of the universities vary depending on research fields where the members of universities actively study on. In this sense, 2000 world universities all around the world has been evaluated according to 5 academic performance criteria in 6 research fields. The institutions within the scope of this study were ranked previously in 2010 by URAP research laboratory in terms of overall academic performance criteria.

If the results are analysed on the basis of indicator values, it's clearly seen that there are significant differences between fields. Especially, Journal Impact Total value of fields present this variation clearly. Additionally, the results indicate that citation culture of the fields differs conspicuously. Affect of different citation cultures of the fields is perceived on H-Index values.

Then again, in correlation with previous studies, it has been observed that some universities could be classified as an outlier with respect to their indicator values. This non-standard distribution can emanate from Kurtosis values, which are presented in previous chapter.

The ranking presented in this study is shown to be non-correlated with URAP 2010 results

when Spearman's rank correlation test is applied. This dissimilarity could be clearly seen in top 10 universities in each field respectively.

## 5.2 Future Work

Within the scope of this work, some methodological improvements are ought to be essential for further analysis to attain more robust and objective results. Some of these improvements will be elaborated below.

It should be kept in mind that focus of this piece of work is still broad. For instance, finer ranking methods could be devised to overlay a more detailed investigation. The proposed ranking methodology is to rank universities over subject areas rather than a field based ranking.

Moreover, the collection of the universities that are involved in this study should be increased. Such an increase in the number of ranked universities will be clearly helpful in increasing the reliability and comprehensiveness of the results. Notably, ranking would be publicly more informative as the number of universities involved increases. This improvement would extend the range of data that is going to be analysed. Therefore, a crucial need for development of novel non-correlated indicators would be essential. Specifically, correlation between the indicators must be specified explicitly and identified correlations would be separated and reduced down to independent indicators.

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# APPENDIX A

## List of Subjects, Subject Categories and Related Fields

Table A.1: List of Subjects, Subject Categories and Related Fields

| SUBJECT | SUBJECT CATEGORY | FIELD |
|---|---|---|
| Agricultural Economics & Policy | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Agricultural Engineering | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Agriculture, Dairy & Animal Science | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Agriculture, Multidisciplinary | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Agronomy | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Food Science & Technology | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Horticulture | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Nutrition & Dietetics | Agricultural Sciences | Agriculture & Environmental Sciences (AGE) |
| Biodiversity Conservation | Environment/Ecology | Agriculture & Environmental Sciences (AGE) |
| Ecology | Environment/Ecology | Agriculture & Environmental Sciences (AGE) |
| Environmental Sciences | Environment/Ecology | Agriculture & Environmental Sciences (AGE) |
| Water Resources | Environment/Ecology | Agriculture & Environmental Sciences (AGE) |

| | | |
|---|---|---|
| Entomology | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Fisheries | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Forestry | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Marine & Freshwater Biology | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Mycology | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Ornithology | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Plant Sciences | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Veterinary Sciences | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Zoology | Plant & Animal Science | Agriculture & Environmental Sciences (AGE) |
| Anthropology | Arts & Humanities | Arts & Humanities (AHCI) |
| Archaeology | Arts & Humanities | Arts & Humanities (AHCI) |
| Architecture | Arts & Humanities | Arts & Humanities (AHCI) |
| Art | Arts & Humanities | Arts & Humanities (AHCI) |
| Classics | Arts & Humanities | Arts & Humanities (AHCI) |
| Cultural Studies | Arts & Humanities | Arts & Humanities (AHCI) |
| Dance | Arts & Humanities | Arts & Humanities (AHCI) |
| History | Arts & Humanities | Arts & Humanities (AHCI) |
| History Of Social Sciences | Arts & Humanities | Arts & Humanities (AHCI) |
| Humanities, Multidisciplinary | Arts & Humanities | Arts & Humanities (AHCI) |
| Language & Linguistics | Arts & Humanities | Arts & Humanities (AHCI) |
| Linguistics | Arts & Humanities | Arts & Humanities (AHCI) |
| Literary Reviews | Arts & Humanities | Arts & Humanities (AHCI) |
| Literary Theory & Criticism | Arts & Humanities | Arts & Humanities (AHCI) |
| Literature | Arts & Humanities | Arts & Humanities (AHCI) |
| Literature, African, Australian, Canadian | Arts & Humanities | Arts & Humanities (AHCI) |
| Literature, American | Arts & Humanities | Arts & Humanities (AHCI) |
| Literature, British Isles | Arts & Humanities | Arts & Humanities (AHCI) |
| Literature, German, Dutch, Scandinavian | Arts & Humanities | Arts & Humanities (AHCI) |
| Literature, Romance | Arts & Humanities | Arts & Humanities (AHCI) |
| Literature, Slavic | Arts & Humanities | Arts & Humanities (AHCI) |

| | | |
|---|---|---|
| Medieval & Renaissance Studies | Arts & Humanities | Arts & Humanities (AHCI) |
| Music | Arts & Humanities | Arts & Humanities (AHCI) |
| Philosophy | Arts & Humanities | Arts & Humanities (AHCI) |
| Poetry | Arts & Humanities | Arts & Humanities (AHCI) |
| Religion | Arts & Humanities | Arts & Humanities (AHCI) |
| Theater | Arts & Humanities | Arts & Humanities (AHCI) |
| Allergy | Clinical Medicine | Clinical Medicine (MED) |
| Andrology | Clinical Medicine | Clinical Medicine (MED) |
| Anesthesiology | Clinical Medicine | Clinical Medicine (MED) |
| Cardiac & Cardiovascular Systems | Clinical Medicine | Clinical Medicine (MED) |
| Clinical Neurology | Clinical Medicine | Clinical Medicine (MED) |
| Critical Care Medicine | Clinical Medicine | Clinical Medicine (MED) |
| Dentistry, Oral Surgery & Medicine | Clinical Medicine | Clinical Medicine (MED) |
| Dermatology | Clinical Medicine | Clinical Medicine (MED) |
| Emergency Medicine | Clinical Medicine | Clinical Medicine (MED) |
| Endocrinology & Metabolism | Clinical Medicine | Clinical Medicine (MED) |
| Gastroenterology & Hepatology | Clinical Medicine | Clinical Medicine (MED) |
| Geriatrics & Gerontology | Clinical Medicine | Clinical Medicine (MED) |
| Gerontology | Clinical Medicine | Clinical Medicine (MED) |
| Health Care Sciences & Services | Clinical Medicine | Clinical Medicine (MED) |
| Hematology | Clinical Medicine | Clinical Medicine (MED) |
| Imaging Science & Photographic Technology | Clinical Medicine | Clinical Medicine (MED) |
| Integrative & Complementary Medicine | Clinical Medicine | Clinical Medicine (MED) |
| Medical Ethics | Clinical Medicine | Clinical Medicine (MED) |
| Medical Informatics | Clinical Medicine | Clinical Medicine (MED) |
| Medical Laboratory Technology | Clinical Medicine | Clinical Medicine (MED) |
| Medicine, General & Internal | Clinical Medicine | Clinical Medicine (MED) |
| Medicine, Legal | Clinical Medicine | Clinical Medicine (MED) |
| Medicine, Research & Experimental | Clinical Medicine | Clinical Medicine (MED) |
| Nursing | Clinical Medicine | Clinical Medicine (MED) |
| Obstetrics & Gynecology | Clinical Medicine | Clinical Medicine (MED) |
| Oncology | Clinical Medicine | Clinical Medicine (MED) |
| Ophthalmology | Clinical Medicine | Clinical Medicine (MED) |
| Orthopedics | Clinical Medicine | Clinical Medicine (MED) |
| Otorhinolaryngology | Clinical Medicine | Clinical Medicine (MED) |
| Pediatrics | Clinical Medicine | Clinical Medicine (MED) |
| Peripheral Vascular Disease | Clinical Medicine | Clinical Medicine (MED) |

| | | |
|---|---|---|
| Radiology, Nuclear Medicine & Medical Imaging | Clinical Medicine | Clinical Medicine (MED) |
| Rehabilitation | Clinical Medicine | Clinical Medicine (MED) |
| Respiratory System | Clinical Medicine | Clinical Medicine (MED) |
| Rheumatology | Clinical Medicine | Clinical Medicine (MED) |
| Surgery | Clinical Medicine | Clinical Medicine (MED) |
| Transplantation | Clinical Medicine | Clinical Medicine (MED) |
| Tropical Medicine | Clinical Medicine | Clinical Medicine (MED) |
| Urology & Nephrology | Clinical Medicine | Clinical Medicine (MED) |
| Psychiatry | Psychiatry | Clinical Medicine (MED) |
| Computer Science, Artificial Intelligence | Computer Science | Engineering, Computing & Technology (ENG) |
| Computer Science, Cybernetics | Computer Science | Engineering, Computing & Technology (ENG) |
| Computer Science, Hardware & Architecture | Computer Science | Engineering, Computing & Technology (ENG) |
| Computer Science, Information Systems | Computer Science | Engineering, Computing & Technology (ENG) |
| Computer Science, Interdisciplinary Applications | Computer Science | Engineering, Computing & Technology (ENG) |
| Computer Science, Software Engineering | Computer Science | Engineering, Computing & Technology (ENG) |
| Computer Science, Theory & Methods | Computer Science | Engineering, Computing & Technology (ENG) |
| Automation & Control Systems | Engineering | Engineering, Computing & Technology (ENG) |
| Construction & Building Technology | Engineering | Engineering, Computing & Technology (ENG) |
| Energy & Fuels | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Aerospace | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Biomedical | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Chemical | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Civil | Engineering | Engineering, Computing & Technology (ENG) |

| | | |
|---|---|---|
| Engineering, Electrical & Electronic | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Environmental | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Geological | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Industrial | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Manufacturing | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Marine | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Mechanical | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Multidisciplinary | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Ocean | Engineering | Engineering, Computing & Technology (ENG) |
| Engineering, Petroleum | Engineering | Engineering, Computing & Technology (ENG) |
| Instruments & Instrumentation | Engineering | Engineering, Computing & Technology (ENG) |
| Mechanics | Engineering | Engineering, Computing & Technology (ENG) |
| Mining & Mineral Processing | Engineering | Engineering, Computing & Technology (ENG) |
| Robotics | Engineering | Engineering, Computing & Technology (ENG) |
| Telecommunications | Engineering | Engineering, Computing & Technology (ENG) |
| Thermodynamics | Engineering | Engineering, Computing & Technology (ENG) |
| Transportation | Engineering | Engineering, Computing & Technology (ENG) |
| Transportation Science & Technology | Engineering | Engineering, Computing & Technology (ENG) |
| Materials Science, Biomaterials | Materials Science | Engineering, Computing & Technology (ENG) |

| | | |
|---|---|---|
| Materials Science, Ceramics | Materials Science | Engineering, Computing & Technology (ENG) |
| Materials Science, Characterization & Testing | Materials Science | Engineering, Computing & Technology (ENG) |
| Materials Science, Coatings & Films | Materials Science | Engineering, Computing & Technology (ENG) |
| Materials Science, Composites | Materials Science | Engineering, Computing & Technology (ENG) |
| Materials Science, Multidisciplinary | Materials Science | Engineering, Computing & Technology (ENG) |
| Materials Science, Paper & Wood | Materials Science | Engineering, Computing & Technology (ENG) |
| Materials Science, Textiles | Materials Science | Engineering, Computing & Technology (ENG) |
| Metallurgy & Metallurgical Engineering | Materials Science | Engineering, Computing & Technology (ENG) |
| Anatomy & Morphology | Biology & Biochemistry | Life Sciences (LIFE) |
| Biochemical Research Methods | Biology & Biochemistry | Life Sciences (LIFE) |
| Biology | Biology & Biochemistry | Life Sciences (LIFE) |
| Biophysics | Biology & Biochemistry | Life Sciences (LIFE) |
| Cell & Tissue Engineering | Biology & Biochemistry | Life Sciences (LIFE) |
| Evolutionary Biology | Biology & Biochemistry | Life Sciences (LIFE) |
| Mathematical & Computational Biology | Biology & Biochemistry | Life Sciences (LIFE) |
| Parasitology | Biology & Biochemistry | Life Sciences (LIFE) |
| Pathology | Biology & Biochemistry | Life Sciences (LIFE) |
| Physiology | Biology & Biochemistry | Life Sciences (LIFE) |
| Reproductive Biology | Biology & Biochemistry | Life Sciences (LIFE) |
| Immunology | Immunology | Life Sciences (LIFE) |
| Infectious Diseases | Immunology | Life Sciences (LIFE) |
| Virology | Immunology | Life Sciences (LIFE) |
| Biotechnology & Applied Microbiology | Microbiology | Life Sciences (LIFE) |
| Microbiology | Microbiology | Life Sciences (LIFE) |
| Microscopy | Microbiology | Life Sciences (LIFE) |
| Biochemistry & Molecular Biology | Molecular Biology & Genetics | Life Sciences (LIFE) |
| Cell Biology | Molecular Biology & Genetics | Life Sciences (LIFE) |
| Developmental Biology | Molecular Biology & Genetics | Life Sciences (LIFE) |

| | | |
|---|---|---|
| Genetics & Heredity | Molecular Biology & Genetics | Life Sciences (LIFE) |
| Behavioral Sciences | Neuroscience & Behavior | Life Sciences (LIFE) |
| Neuroimaging | Neuroscience & Behavior | Life Sciences (LIFE) |
| Neurosciences | Neuroscience & Behavior | Life Sciences (LIFE) |
| Pharmacology & Pharmacy | Pharmacology & Toxicology | Life Sciences (LIFE) |
| Substance Abuse | Pharmacology & Toxicology | Life Sciences (LIFE) |
| Toxicology | Pharmacology & Toxicology | Life Sciences (LIFE) |
| Chemistry, Analytical | Chemistry | Natural Sciences (SCI) |
| Chemistry, Applied | Chemistry | Natural Sciences (SCI) |
| Chemistry, Inorganic & Nuclear | Chemistry | Natural Sciences (SCI) |
| Chemistry, Medicinal | Chemistry | Natural Sciences (SCI) |
| Chemistry, Multidisciplinary | Chemistry | Natural Sciences (SCI) |
| Chemistry, Organic | Chemistry | Natural Sciences (SCI) |
| Chemistry, Physical | Chemistry | Natural Sciences (SCI) |
| Crystallography | Chemistry | Natural Sciences (SCI) |
| Electrochemistry | Chemistry | Natural Sciences (SCI) |
| Polymer Science | Chemistry | Natural Sciences (SCI) |
| Spectroscopy | Chemistry | Natural Sciences (SCI) |
| Geochemistry & Geophysics | Geosciences | Natural Sciences (SCI) |
| Geography | Geosciences | Natural Sciences (SCI) |
| Geography, Physical | Geosciences | Natural Sciences (SCI) |
| Geology | Geosciences | Natural Sciences (SCI) |
| Geosciences, Multidisciplinary | Geosciences | Natural Sciences (SCI) |
| Limnology | Geosciences | Natural Sciences (SCI) |
| Meteorology & Atmospheric Sciences | Geosciences | Natural Sciences (SCI) |
| Mineralogy | Geosciences | Natural Sciences (SCI) |
| Oceanography | Geosciences | Natural Sciences (SCI) |
| Paleontology | Geosciences | Natural Sciences (SCI) |
| Remote Sensing | Geosciences | Natural Sciences (SCI) |
| Soil Science | Geosciences | Natural Sciences (SCI) |
| Mathematics | Mathematics | Natural Sciences (SCI) |
| Mathematics, Applied | Mathematics | Natural Sciences (SCI) |
| Mathematics, Interdisciplinary Applications | Mathematics | Natural Sciences (SCI) |
| Statistics & Probability | Mathematics | Natural Sciences (SCI) |

| | | |
|---|---|---|
| Multidisciplinary Sciences | Natural Sciences, General | Natural Sciences (SCI) |
| Acoustics | Physics | Natural Sciences (SCI) |
| Nanoscience & Nanotechnology | Physics | Natural Sciences (SCI) |
| Nuclear Science & Technology | Physics | Natural Sciences (SCI) |
| Optics | Physics | Natural Sciences (SCI) |
| Physics, Applied | Physics | Natural Sciences (SCI) |
| Physics, Atomic, Molecular & Chemical | Physics | Natural Sciences (SCI) |
| Physics, Condensed Matter | Physics | Natural Sciences (SCI) |
| Physics, Fluids & Plasmas | Physics | Natural Sciences (SCI) |
| Physics, Mathematical | Physics | Natural Sciences (SCI) |
| Physics, Multidisciplinary | Physics | Natural Sciences (SCI) |
| Physics, Nuclear | Physics | Natural Sciences (SCI) |
| Physics, Particles & Fields | Physics | Natural Sciences (SCI) |
| Psychology | Psychology | Natural Sciences (SCI) |
| Psychology, Applied | Psychology | Natural Sciences (SCI) |
| Psychology, Biological | Psychology | Natural Sciences (SCI) |
| Psychology, Clinical | Psychology | Natural Sciences (SCI) |
| Psychology, Developmental | Psychology | Natural Sciences (SCI) |
| Psychology, Educational | Psychology | Natural Sciences (SCI) |
| Psychology, Experimental | Psychology | Natural Sciences (SCI) |
| Psychology, Mathematical | Psychology | Natural Sciences (SCI) |
| Psychology, Multidisciplinary | Psychology | Natural Sciences (SCI) |
| Psychology, Psychoanalysis | Psychology | Natural Sciences (SCI) |
| Psychology, Social | Psychology | Natural Sciences (SCI) |
| Astronomy & Astrophysics | Space Science | Natural Sciences (SCI) |
| Business | Economics & Business | Social Sciences (SOC) |
| Business, Finance | Economics & Business | Social Sciences (SOC) |
| Economics | Economics & Business | Social Sciences (SOC) |
| Industrial Relations & Labor | Economics & Business | Social Sciences (SOC) |
| Management | Economics & Business | Social Sciences (SOC) |
| Operations Research & Management Science | Economics & Business | Social Sciences (SOC) |
| Area Studies | Social Sciences, General | Social Sciences (SOC) |
| Asian Studies | Social Sciences, General | Social Sciences (SOC) |
| Communication | Social Sciences, General | Social Sciences (SOC) |
| Criminology & Penology | Social Sciences, General | Social Sciences (SOC) |
| Demography | Social Sciences, General | Social Sciences (SOC) |
| Education & Educational Research | Social Sciences, General | Social Sciences (SOC) |

| | | |
|---|---|---|
| Education, Scientific Disciplines | Social Sciences, General | Social Sciences (SOC) |
| Education, Special | Social Sciences, General | Social Sciences (SOC) |
| Environmental Studies | Social Sciences, General | Social Sciences (SOC) |
| Ergonomics | Social Sciences, General | Social Sciences (SOC) |
| Ethics | Social Sciences, General | Social Sciences (SOC) |
| Ethnic Studies | Social Sciences, General | Social Sciences (SOC) |
| Family Studies | Social Sciences, General | Social Sciences (SOC) |
| Film, Radio, Television | Social Sciences, General | Social Sciences (SOC) |
| Folklore | Social Sciences, General | Social Sciences (SOC) |
| Health Policy & Services | Social Sciences, General | Social Sciences (SOC) |
| History & Philosophy Of Science | Social Sciences, General | Social Sciences (SOC) |
| Hospitality, Leisure, Sport & Tourism | Social Sciences, General | Social Sciences (SOC) |
| Information Science & Library Science | Social Sciences, General | Social Sciences (SOC) |
| International Relations | Social Sciences, General | Social Sciences (SOC) |
| Law | Social Sciences, General | Social Sciences (SOC) |
| Planning & Development | Social Sciences, General | Social Sciences (SOC) |
| Political Science | Social Sciences, General | Social Sciences (SOC) |
| Public Administration | Social Sciences, General | Social Sciences (SOC) |
| Public, Environmental & Occupational Health | Social Sciences, General | Social Sciences (SOC) |
| Social Issues | Social Sciences, General | Social Sciences (SOC) |
| Social Sciences, Biomedical | Social Sciences, General | Social Sciences (SOC) |
| Social Sciences, Interdisciplinary | Social Sciences, General | Social Sciences (SOC) |
| Social Sciences, Mathematical Methods | Social Sciences, General | Social Sciences (SOC) |
| Social Work | Social Sciences, General | Social Sciences (SOC) |
| Sociology | Social Sciences, General | Social Sciences (SOC) |
| Sport Sciences | Social Sciences, General | Social Sciences (SOC) |
| Urban Studies | Social Sciences, General | Social Sciences (SOC) |
| Women's Studies | Social Sciences, General | Social Sciences (SOC) |

# APPENDIX B

## Ranking of Top 100 Universities in Fields



Table B.1: Agriculture & Environmental Sciences (*AGE*)

| **University** | **Rank** | **JIT**[1] | **Score**[1] | **Total Article Count**[2] | **Score**[2] | **Total Document Count**[3] | **Score**[3] | **H-Index**[4] | **Score**[4] | **Total Citation Count**[5] | **Score**[5] | **TOTAL SCORE** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of California Davis | 1 | 10262.92 | 90.00 | 924.83 | 134.71 | 6909.50 | 65.00 | 25.80 | 89.56 | 10774.00 | 115.00 | 494.27 |
| University of Florida | 2 | 7971.26 | 79.79 | 998.58 | 140.00 | 6802.42 | 64.49 | 21.40 | 79.95 | 7504.00 | 97.25 | 461.47 |
| Cornell University | 3 | 7131.57 | 76.05 | 662.50 | 115.90 | 4842.58 | 55.10 | 23.20 | 83.88 | 7564.00 | 97.57 | 428.50 |
| University of Wisconsin Madison | 4 | 6056.22 | 71.25 | 514.83 | 105.31 | 3770.08 | 49.96 | 23.80 | 85.19 | 6937.00 | 94.17 | 405.89 |
| University of California Berkeley | 5 | 5443.04 | 68.52 | 435.25 | 99.60 | 2714.17 | 44.91 | 26.00 | 90.00 | 7152.00 | 95.33 | 398.36 |
| University of Georgia | 6 | 5539.26 | 68.95 | 588.75 | 110.61 | 4289.08 | 52.45 | 20.60 | 78.20 | 5605.00 | 86.93 | 397.15 |
| Michigan State University | 7 | 5324.93 | 68.00 | 540.83 | 107.17 | 3598.83 | 49.14 | 22.20 | 81.70 | 5636.00 | 87.10 | 393.11 |
| Universidade de São Paulo | 8 | 4525.04 | 64.43 | 816.33 | 126.93 | 4148.25 | 51.78 | 15.80 | 67.72 | 4421.00 | 80.51 | 391.36 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ghent University | 9 | 4972.81 | 66.43 | 607.00 | 111.92 | 3159.50 | 47.04 | 19.40 | 75.58 | 5191.00 | 84.69 | 385.65 |
| University of Queensland | 10 | 4946.69 | 66.31 | 519.17 | 105.62 | 2846.83 | 45.54 | 22.20 | 81.70 | 5431.00 | 85.99 | 385.16 |
| University of Tokyo | 11 | 4902.00 | 66.11 | 517.17 | 105.48 | 3289.50 | 47.66 | 21.00 | 79.08 | 5272.00 | 85.13 | 383.45 |
| Oregon State University | 12 | 4870.20 | 65.97 | 452.75 | 100.86 | 3512.08 | 48.73 | 21.80 | 80.83 | 5541.00 | 86.59 | 382.96 |
| University of Copenhagen | 13 | 4855.38 | 65.90 | 577.00 | 109.77 | 2698.67 | 44.83 | 20.20 | 77.33 | 5071.00 | 84.03 | 381.87 |
| University of British Columbia | 14 | 4942.01 | 66.29 | 462.08 | 101.52 | 2729.67 | 44.98 | 22.20 | 81.70 | 5643.00 | 87.14 | 381.63 |
| Harvard University | 15 | 4731.79 | 65.35 | 333.33 | 92.29 | 2113.58 | 42.03 | 25.20 | 88.25 | 6176.00 | 90.03 | 377.96 |
| University of Guelph | 16 | 4524.64 | 64.43 | 542.00 | 107.26 | 3621.67 | 49.25 | 18.80 | 74.27 | 4681.00 | 81.92 | 377.13 |
| North Carolina State University | 17 | 4532.01 | 64.46 | 560.00 | 108.55 | 3856.08 | 50.38 | 17.20 | 70.78 | 4393.00 | 80.35 | 374.51 |
| University of Helsinki | 18 | 4839.65 | 65.83 | 430.00 | 99.22 | 2652.75 | 44.61 | 20.80 | 78.64 | 5282.00 | 85.18 | 373.49 |
| Swedish University of Agricultural Sciences | 19 | 4895.43 | 66.08 | 497.17 | 104.04 | 2678.00 | 44.73 | 19.00 | 74.71 | 4997.00 | 83.63 | 373.20 |
| Texas A&M University | 20 | 4104.48 | 62.56 | 528.25 | 106.27 | 3628.50 | 49.29 | 18.00 | 72.52 | 4213.00 | 79.38 | 370.01 |
| Colorado State University | 21 | 4070.98 | 62.41 | 414.75 | 98.13 | 3022.83 | 46.38 | 19.40 | 75.58 | 4542.00 | 81.16 | 363.67 |
| University of Illinois Urbana Champaign | 22 | 4212.87 | 63.04 | 402.58 | 97.26 | 2988.08 | 46.22 | 18.80 | 74.27 | 4701.00 | 82.03 | 362.81 |
| Pennsylvania State University | 23 | 4042.87 | 62.28 | 356.00 | 93.92 | 2545.75 | 44.10 | 21.60 | 80.39 | 4627.00 | 81.62 | 362.31 |
| Iowa State University | 24 | 4132.69 | 62.68 | 424.33 | 98.82 | 2974.58 | 46.15 | 17.80 | 72.09 | 4130.00 | 78.93 | 358.67 |
| Purdue University | 25 | 4140.77 | 62.72 | 411.17 | 97.87 | 2723.17 | 44.95 | 19.00 | 74.71 | 3893.00 | 77.64 | 357.89 |
| Ohio State University | 26 | 3958.12 | 61.90 | 408.00 | 97.65 | 3203.42 | 47.25 | 17.80 | 72.09 | 4024.00 | 78.35 | 357.24 |
| University of Alberta | 27 | 3959.09 | 61.91 | 419.00 | 98.44 | 2577.58 | 44.25 | 18.80 | 74.27 | 4027.00 | 78.37 | 357.23 |
| Wageningen University & Research Centre | 28 | 3634.68 | 60.46 | 547.33 | 107.64 | 2036.50 | 41.66 | 18.00 | 72.52 | 3280.00 | 74.31 | 356.60 |
| Universidad Nacional Autónoma de México | 29 | 3643.71 | 60.50 | 546.33 | 107.57 | 3038.08 | 46.46 | 15.20 | 66.41 | 3124.00 | 73.46 | 354.40 |
| China Agricultural University | 30 | 3693.41 | 60.72 | 510.75 | 105.01 | 2655.58 | 44.63 | 16.20 | 68.59 | 3475.00 | 75.37 | 354.33 |
| Kyoto University | 31 | 3990.27 | 62.05 | 438.33 | 99.82 | 2724.17 | 44.95 | 17.20 | 70.78 | 3702.00 | 76.60 | 354.20 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zhejiang University | 32 | 3941.02 | 61.83 | 408.25 | 97.66 | 2289.58 | 42.87 | 17.60 | 71.65 | 4193.00 | 79.27 | 353.28 |
| Swiss Federal Institute of Technology ETH Zürich | 33 | 3551.24 | 60.09 | 317.17 | 91.13 | 1683.08 | 39.97 | 21.40 | 79.95 | 4453.00 | 80.68 | 351.82 |
| Aarhus University | 34 | 3539.11 | 60.04 | 417.33 | 98.32 | 1907.50 | 41.04 | 19.00 | 74.71 | 3891.00 | 77.63 | 351.73 |
| University of Washington Seattle | 35 | 3549.81 | 60.09 | 304.50 | 90.22 | 2210.33 | 42.49 | 20.20 | 77.33 | 4254.00 | 79.60 | 349.73 |
| Utrecht University | 36 | 3358.97 | 59.23 | 318.33 | 91.22 | 1894.83 | 40.98 | 19.80 | 76.46 | 3976.00 | 78.09 | 345.98 |
| University of Toronto | 37 | 3675.04 | 60.64 | 263.08 | 87.25 | 1748.58 | 40.28 | 20.40 | 77.77 | 4147.00 | 79.02 | 344.96 |
| University of Arizona | 38 | 3400.51 | 59.42 | 288.75 | 89.09 | 2122.00 | 42.07 | 19.60 | 76.02 | 4010.00 | 78.27 | 344.88 |
| Universidade Estadual Paulista | 39 | 2443.72 | 55.16 | 650.92 | 115.07 | 3275.83 | 47.60 | 11.20 | 57.67 | 2302.00 | 69.00 | 344.49 |
| University of Oxford | 40 | 3364.73 | 59.26 | 288.50 | 89.08 | 1504.33 | 39.11 | 20.60 | 78.20 | 3874.00 | 77.54 | 343.19 |
| Duke University | 41 | 3049.14 | 57.85 | 204.00 | 83.02 | 1492.00 | 39.05 | 22.80 | 83.01 | 4280.00 | 79.74 | 342.67 |
| University of Melbourne | 42 | 3293.26 | 58.94 | 352.75 | 93.68 | 1955.33 | 41.27 | 18.20 | 72.96 | 3479.00 | 75.39 | 342.25 |
| University of Cambridge | 43 | 3348.28 | 59.19 | 259.50 | 87.00 | 1754.67 | 40.31 | 19.60 | 76.02 | 3831.00 | 77.30 | 339.82 |
| University of Sydney | 44 | 3255.99 | 58.78 | 370.25 | 94.94 | 2150.75 | 42.21 | 16.60 | 69.47 | 3244.00 | 74.11 | 339.50 |
| Universität Zürich | 45 | 3034.58 | 57.79 | 338.58 | 92.67 | 1823.92 | 40.64 | 18.00 | 72.52 | 3254.00 | 74.17 | 337.79 |
| Lund University | 46 | 3013.99 | 57.70 | 223.25 | 84.40 | 1468.33 | 38.94 | 19.80 | 76.46 | 3773.00 | 76.99 | 334.48 |
| University of Edinburgh | 47 | 2897.54 | 57.18 | 268.00 | 87.61 | 1482.83 | 39.01 | 19.60 | 76.02 | 3233.00 | 74.06 | 333.87 |
| Australian National University | 48 | 2922.70 | 57.29 | 260.33 | 87.06 | 1444.83 | 38.83 | 19.00 | 74.71 | 3544.00 | 75.74 | 333.63 |
| University of California Riverside | 49 | 2928.98 | 57.32 | 244.17 | 85.90 | 1788.50 | 40.47 | 18.80 | 74.27 | 3526.00 | 75.65 | 333.61 |
| Virginia Polytechnic Institute and State University | 50 | 2891.84 | 57.15 | 326.83 | 91.83 | 2381.00 | 43.31 | 15.60 | 67.28 | 2896.00 | 72.23 | 331.80 |
| National Taiwan University | 51 | 3123.92 | 58.19 | 350.08 | 93.49 | 1746.75 | 40.27 | 15.20 | 66.41 | 3114.00 | 73.41 | 331.77 |
| Seoul National University | 52 | 2625.90 | 55.97 | 392.83 | 96.56 | 1833.75 | 40.69 | 15.00 | 65.97 | 2940.00 | 72.46 | 331.65 |
| Kansas State University | 53 | 2749.06 | 56.52 | 371.17 | 95.00 | 2345.83 | 43.14 | 14.60 | 65.10 | 2618.00 | 70.72 | 330.48 |
| University of Western Australia | 54 | 3118.36 | 58.16 | 301.75 | 90.03 | 1702.75 | 40.06 | 16.80 | 69.90 | 2906.00 | 72.28 | 330.43 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| McGill University | 55 | 2823.26 | 56.85 | 251.75 | 86.44 | 1648.42 | 39.80 | 17.80 | 72.09 | 3265.00 | 74.23 | 329.41 |
| University of Michigan Ann Arbor | 56 | 2891.05 | 57.15 | 227.58 | 84.71 | 1391.42 | 38.57 | 18.60 | 73.83 | 3276.00 | 74.29 | 328.55 |
| Louisiana State University | 57 | 2754.19 | 56.54 | 325.67 | 91.74 | 2302.92 | 42.94 | 14.60 | 65.10 | 2745.00 | 71.41 | 327.72 |
| Washington State University Pullman | 58 | 2766.61 | 56.59 | 298.67 | 89.81 | 2038.67 | 41.67 | 16.00 | 68.16 | 2670.00 | 71.00 | 327.22 |
| University of Tennessee Knoxville | 59 | 2617.89 | 55.93 | 290.08 | 89.19 | 1907.58 | 41.04 | 16.60 | 69.47 | 2702.00 | 71.17 | 326.80 |
| Universitat Autònoma de Barcelona | 60 | 2615.94 | 55.92 | 284.17 | 88.77 | 1584.00 | 39.49 | 16.60 | 69.47 | 2849.00 | 71.97 | 325.62 |
| Stanford University | 61 | 2464.83 | 55.25 | 179.08 | 81.23 | 1091.92 | 37.14 | 19.80 | 76.46 | 3484.00 | 75.42 | 325.49 |
| Universität Göttingen | 62 | 2547.91 | 55.62 | 315.75 | 91.03 | 1596.17 | 39.55 | 16.20 | 68.59 | 2608.00 | 70.66 | 325.46 |
| University of Missouri Columbia | 63 | 2573.83 | 55.74 | 274.17 | 88.05 | 1882.00 | 40.92 | 16.80 | 69.90 | 2571.00 | 70.46 | 325.07 |
| University of Bristol | 64 | 2424.29 | 55.07 | 248.17 | 86.18 | 1531.17 | 39.24 | 17.60 | 71.65 | 2920.00 | 72.36 | 324.50 |
| Université Laval | 65 | 2613.47 | 55.91 | 253.75 | 86.58 | 1555.17 | 39.36 | 17.00 | 70.34 | 2879.00 | 72.13 | 324.32 |
| Hokkaido University | 66 | 2615.02 | 55.92 | 320.33 | 91.36 | 1881.33 | 40.92 | 14.60 | 65.10 | 2566.00 | 70.43 | 323.73 |
| University of Saskatchewan | 67 | 2516.81 | 55.48 | 315.00 | 90.98 | 1967.17 | 41.33 | 14.80 | 65.53 | 2465.00 | 69.89 | 323.21 |
| University of Oslo | 68 | 2476.19 | 55.30 | 211.00 | 83.52 | 1152.58 | 37.43 | 18.00 | 72.52 | 3073.00 | 73.19 | 321.96 |
| Yale University | 69 | 2277.54 | 54.42 | 193.17 | 82.24 | 1076.33 | 37.06 | 19.40 | 75.58 | 2944.00 | 72.49 | 321.79 |
| Università degli Studi di Milano | 70 | 2438.13 | 55.13 | 274.42 | 88.07 | 1631.75 | 39.72 | 15.80 | 67.72 | 2637.00 | 70.82 | 321.46 |
| University of Adelaide | 71 | 2476.61 | 55.30 | 236.33 | 85.34 | 1417.33 | 38.70 | 17.00 | 70.34 | 2701.00 | 71.17 | 320.84 |
| Stockholm University | 72 | 2317.83 | 54.60 | 182.92 | 81.50 | 1089.75 | 37.13 | 18.80 | 74.27 | 3099.00 | 73.33 | 320.83 |
| Universidade Federal de Viçosa | 73 | 1628.83 | 51.52 | 543.67 | 107.38 | 2327.67 | 43.06 | 9.60 | 54.17 | 1384.00 | 64.02 | 320.15 |
| University of Aberdeen | 74 | 2291.41 | 54.48 | 210.83 | 83.51 | 1267.00 | 37.98 | 18.20 | 72.96 | 2638.00 | 70.82 | 319.74 |
| Uppsala University | 75 | 2339.60 | 54.69 | 182.75 | 81.49 | 1083.42 | 37.10 | 18.80 | 74.27 | 2870.00 | 72.08 | 319.64 |
| Universitat de Barcelona | 76 | 2469.80 | 55.27 | 258.50 | 86.92 | 1331.17 | 38.28 | 15.80 | 67.72 | 2637.00 | 70.82 | 319.02 |
| University of Sheffield | 77 | 2386.49 | 54.90 | 165.50 | 80.26 | 1068.67 | 37.03 | 18.80 | 74.27 | 2864.00 | 72.05 | 318.51 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Maryland | 78 | 2107.22 | 53.66 | 209.33 | 83.40 | 1364.92 | 38.44 | 17.60 | 71.65 | 2690.00 | 71.11 | 318.26 |
| Catholic University of Leuven | 79 | 2388.92 | 54.91 | 246.42 | 86.06 | 1365.25 | 38.45 | 16.00 | 68.16 | 2570.00 | 70.46 | 318.03 |
| University of Tehran | 80 | 1451.41 | 50.73 | 482.58 | 102.99 | 1740.58 | 40.24 | 11.80 | 58.98 | 1565.00 | 65.00 | 317.95 |
| Rutgers University | 81 | 2168.63 | 53.93 | 192.92 | 82.22 | 1443.50 | 38.82 | 16.20 | 68.59 | 2820.00 | 71.81 | 315.38 |
| University of Nebraska Lincoln | 82 | 2210.81 | 54.12 | 252.83 | 86.52 | 1741.00 | 40.25 | 14.60 | 65.10 | 2340.00 | 69.21 | 315.19 |
| University of Massachusetts Amherst | 83 | 2018.52 | 53.26 | 186.17 | 81.74 | 1290.50 | 38.09 | 17.40 | 71.21 | 2634.00 | 70.80 | 315.10 |
| Universität Bern | 84 | 2032.99 | 53.33 | 245.92 | 86.02 | 1271.42 | 38.00 | 16.00 | 68.16 | 2413.00 | 69.60 | 315.10 |
| James Cook University North Queensland | 85 | 2127.44 | 53.75 | 221.50 | 84.27 | 1255.67 | 37.92 | 16.60 | 69.47 | 2227.00 | 68.59 | 314.00 |
| Université Paris 6 Pierre and Marie Curie | 86 | 2226.92 | 54.19 | 154.50 | 79.47 | 996.42 | 36.68 | 17.60 | 71.65 | 2771.00 | 71.55 | 313.53 |
| University of California San Diego | 87 | 1882.32 | 52.65 | 150.50 | 79.18 | 930.92 | 36.37 | 18.60 | 73.83 | 2542.00 | 70.30 | 312.34 |
| Nanjing Agricultural University | 88 | 2131.31 | 53.76 | 314.83 | 90.96 | 1347.17 | 38.36 | 13.00 | 61.60 | 1980.00 | 67.25 | 311.94 |
| University of Kentucky | 89 | 2143.77 | 53.82 | 231.50 | 84.99 | 1463.08 | 38.91 | 15.20 | 66.41 | 2077.00 | 67.78 | 311.91 |
| University of North Carolina Chapel Hill | 90 | 2259.95 | 54.34 | 151.00 | 79.22 | 1017.50 | 36.78 | 17.00 | 70.34 | 2707.00 | 71.20 | 311.87 |
| Peking University | 91 | 2138.38 | 53.80 | 203.67 | 82.99 | 914.08 | 36.29 | 16.40 | 69.03 | 2439.00 | 69.74 | 311.85 |
| Aristotle University of Thessaloniki | 92 | 1990.79 | 53.14 | 248.08 | 86.18 | 1580.17 | 39.48 | 14.00 | 63.79 | 2301.00 | 68.99 | 311.57 |
| Technical University of Denmark | 93 | 1920.84 | 52.83 | 213.17 | 83.67 | 1039.83 | 36.89 | 16.00 | 68.16 | 2406.00 | 69.56 | 311.11 |
| Arizona State University | 94 | 1863.23 | 52.57 | 205.67 | 83.14 | 1053.00 | 36.95 | 16.40 | 69.03 | 2310.00 | 69.04 | 310.73 |
| Universidade Estadual de Campinas | 95 | 1824.55 | 52.40 | 278.33 | 88.35 | 1487.00 | 39.03 | 14.00 | 63.79 | 1938.00 | 67.02 | 310.58 |
| Università di Bologna | 96 | 1945.46 | 52.94 | 249.25 | 86.26 | 1557.67 | 39.37 | 13.80 | 63.35 | 2191.00 | 68.40 | 310.31 |
| University of Leeds | 97 | 1952.57 | 52.97 | 161.67 | 79.98 | 949.92 | 36.46 | 17.40 | 71.21 | 2383.00 | 69.44 | 310.06 |
| Università degli Studi di Napoli Federico II | 98 | 1979.95 | 53.09 | 219.08 | 84.10 | 1405.33 | 38.64 | 14.80 | 65.53 | 2233.00 | 68.63 | 309.98 |
| University of Colorado Boulder | 99 | 1706.14 | 51.87 | 139.33 | 78.38 | 827.92 | 35.87 | 18.20 | 72.96 | 2605.00 | 70.65 | 309.73 |
| University of Tasmania | 100 | 2204.80 | 54.09 | 216.50 | 83.91 | 1263.17 | 37.96 | 14.60 | 65.10 | 2194.00 | 68.41 | 309.47 |

Table B.2: Clinical Medicine (*MED*)

| **University** | **Rank** | **JIT**[1] | **Score**[1] | **Total Article Count**[2] | **Score**[2] | **Total Document Count**[3] | **Score**[3] | **H-Index**[4] | **Score**[4] | **Total Citation Count**[5] | **Score**[5] | **TOTAL SCORE** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Harvard University | 1 | 107867.58 | 90.00 | 3609.08 | 140.00 | 27704.33 | 65.00 | 74.80 | 90.00 | 84715.00 | 115.00 | 500.00 |
| Johns Hopkins University | 2 | 49993.15 | 65.81 | 2159.25 | 111.71 | 18556.00 | 54.21 | 57.40 | 78.75 | 44797.00 | 87.85 | 398.33 |
| University of California San Francisco | 3 | 56028.51 | 68.33 | 1982.00 | 108.25 | 16201.67 | 51.43 | 58.00 | 79.14 | 40026.00 | 84.60 | 391.76 |
| University of Toronto | 4 | 41340.15 | 62.19 | 2201.17 | 112.53 | 16821.34 | 52.16 | 51.20 | 74.74 | 36390.00 | 82.13 | 383.76 |
| University of Pennsylvania | 5 | 38114.58 | 60.85 | 1697.50 | 102.70 | 14823.42 | 49.81 | 53.60 | 76.29 | 33780.00 | 80.35 | 370.00 |
| University of Pittsburgh | 6 | 37258.83 | 60.49 | 1714.08 | 103.02 | 15777.75 | 50.93 | 50.60 | 74.35 | 33955.00 | 80.47 | 369.27 |
| University of Washington Seattle | 7 | 37252.28 | 60.48 | 1636.17 | 101.50 | 13322.58 | 48.04 | 54.00 | 76.55 | 34597.00 | 80.91 | 367.49 |
| University of California Los Angeles | 8 | 36595.16 | 60.21 | 1648.33 | 101.74 | 15002.59 | 50.02 | 49.00 | 73.32 | 33483.00 | 80.15 | 365.44 |
| University of Michigan Ann Arbor | 9 | 35424.40 | 59.72 | 1630.92 | 101.40 | 14016.75 | 48.86 | 50.00 | 73.97 | 31843.00 | 79.04 | 362.98 |
| Duke University | 10 | 35899.46 | 59.92 | 1526.42 | 99.36 | 13012.50 | 47.67 | 54.40 | 76.81 | 30950.00 | 78.43 | 362.19 |
| Columbia University New York | 11 | 31424.02 | 58.05 | 1307.50 | 95.09 | 11825.17 | 46.27 | 49.40 | 73.58 | 28461.00 | 76.74 | 349.72 |
| Karolinska Institute | 12 | 31260.98 | 57.98 | 1460.92 | 98.08 | 11130.58 | 45.45 | 44.20 | 70.22 | 28291.00 | 76.62 | 348.35 |
| Stanford University | 13 | 28174.49 | 56.69 | 1347.17 | 95.86 | 11642.42 | 46.06 | 47.20 | 72.16 | 25386.00 | 74.64 | 345.41 |
| University of California San Diego | 14 | 26666.88 | 56.06 | 1207.83 | 93.15 | 9344.66 | 43.35 | 46.80 | 71.90 | 24203.00 | 73.84 | 338.29 |
| University of North Carolina Chapel Hill | 15 | 26112.73 | 55.83 | 1206.00 | 93.11 | 9471.67 | 43.50 | 46.40 | 71.64 | 24452.00 | 74.01 | 338.08 |
| Washington University Saint Louis | 16 | 26579.34 | 56.02 | 1189.33 | 92.78 | 10354.75 | 44.54 | 45.60 | 71.12 | 23719.00 | 73.51 | 337.98 |
| Emory University | 17 | 31487.43 | 58.08 | 1141.58 | 91.85 | 10000.41 | 44.12 | 43.00 | 69.44 | 20685.00 | 71.45 | 334.93 |
| University College London | 18 | 25429.57 | 55.54 | 1215.33 | 93.29 | 9337.00 | 43.34 | 43.80 | 69.96 | 21046.00 | 71.69 | 333.82 |
| Yale University | 19 | 26054.09 | 55.80 | 1093.00 | 90.91 | 10072.83 | 44.20 | 43.60 | 69.83 | 22828.00 | 72.90 | 333.65 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Imperial College | 20 | 24634.57 | 55.21 | 1114.75 | 91.33 | 9510.33 | 43.54 | 44.80 | 70.60 | 21229.00 | 71.82 | 332.50 |
| Erasmus University | 21 | 20783.29 | 53.60 | 1219.67 | 93.38 | 9073.42 | 43.03 | 40.60 | 67.89 | 19539.00 | 70.67 | 328.56 |
| University of Minnesota | 22 | 23189.05 | 54.61 | 1106.42 | 91.17 | 9128.75 | 43.09 | 40.00 | 67.50 | 20031.00 | 71.00 | 327.37 |
| Northwestern University | 23 | 22618.85 | 54.37 | 1084.17 | 90.73 | 9424.42 | 43.44 | 40.00 | 67.50 | 18980.00 | 70.29 | 326.33 |
| University of Melbourne | 24 | 20721.62 | 53.58 | 1279.17 | 94.54 | 8341.25 | 42.16 | 36.80 | 65.43 | 17697.00 | 69.41 | 325.12 |
| King's College London | 25 | 21022.75 | 53.70 | 1140.33 | 91.83 | 9136.00 | 43.10 | 38.40 | 66.47 | 17608.00 | 69.35 | 324.45 |
| Ruprecht Karls Universität Heidelberg | 26 | 20745.48 | 53.59 | 1127.33 | 91.58 | 8807.09 | 42.71 | 39.00 | 66.85 | 17788.00 | 69.48 | 324.20 |
| University of Amsterdam | 27 | 21782.30 | 54.02 | 1129.50 | 91.62 | 7705.66 | 41.41 | 40.00 | 67.50 | 17135.00 | 69.03 | 323.58 |
| University of Oxford | 28 | 21467.70 | 53.89 | 909.75 | 87.33 | 7034.17 | 40.62 | 44.40 | 70.34 | 19585.00 | 70.70 | 322.88 |
| University of Alabama Birmingham | 29 | 20870.16 | 53.64 | 996.17 | 89.02 | 8831.59 | 42.74 | 39.80 | 67.37 | 17561.00 | 69.32 | 322.09 |
| Leiden University | 30 | 22334.29 | 54.25 | 1024.00 | 89.56 | 7578.92 | 41.26 | 40.60 | 67.89 | 17267.00 | 69.12 | 322.08 |
| McGill University | 31 | 20427.78 | 53.45 | 981.92 | 88.74 | 8205.75 | 42.00 | 39.80 | 67.37 | 18795.00 | 70.16 | 321.73 |
| University of British Columbia | 32 | 18717.58 | 52.74 | 1068.75 | 90.43 | 7875.17 | 41.61 | 38.60 | 66.59 | 17066.00 | 68.99 | 320.36 |
| Boston University | 33 | 20146.00 | 53.33 | 940.75 | 87.93 | 6968.25 | 40.54 | 41.80 | 68.66 | 17343.00 | 69.17 | 319.65 |
| University of Sydney | 34 | 18430.28 | 52.62 | 1133.00 | 91.69 | 8183.08 | 41.98 | 34.40 | 63.88 | 16218.00 | 68.41 | 318.57 |
| University of Southern California | 35 | 19072.86 | 52.89 | 1030.75 | 89.69 | 7696.75 | 41.40 | 38.00 | 66.21 | 16069.00 | 68.31 | 318.49 |
| Vanderbilt University | 36 | 20452.44 | 53.46 | 949.42 | 88.10 | 7465.09 | 41.13 | 38.80 | 66.72 | 17054.00 | 68.98 | 318.40 |
| University of Copenhagen | 37 | 18534.81 | 52.66 | 1107.42 | 91.19 | 6701.58 | 40.23 | 36.60 | 65.30 | 16935.00 | 68.90 | 318.27 |
| Ludwig Maximilians Universität München | 38 | 16799.87 | 51.94 | 1024.42 | 89.57 | 7831.25 | 41.56 | 37.60 | 65.95 | 15642.00 | 68.02 | 317.03 |
| New York University | 39 | 17356.81 | 52.17 | 983.83 | 88.78 | 8098.92 | 41.88 | 38.00 | 66.21 | 15543.00 | 67.95 | 316.98 |
| University of Chicago | 40 | 18304.79 | 52.57 | 896.50 | 87.07 | 7983.83 | 41.74 | 39.80 | 67.37 | 15674.00 | 68.04 | 316.79 |
| Utrecht University | 41 | 20040.36 | 53.29 | 1027.33 | 89.62 | 6733.25 | 40.27 | 35.40 | 64.53 | 16432.00 | 68.55 | 316.26 |
| Universidade de São Paulo | 42 | 13010.94 | 50.35 | 1508.83 | 99.02 | 9803.66 | 43.89 | 25.80 | 58.32 | 10619.00 | 64.60 | 316.18 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ohio State University | 43 | 17213.23 | 52.11 | 878.67 | 86.72 | 7117.75 | 40.72 | 39.00 | 66.85 | 14934.00 | 67.54 | 313.94 |
| University of Wisconsin Madison | 44 | 16793.82 | 51.93 | 869.33 | 86.54 | 7252.08 | 40.88 | 37.80 | 66.08 | 15595.00 | 67.99 | 313.42 |
| Cornell University | 45 | 17084.11 | 52.05 | 736.75 | 83.95 | 7078.25 | 40.67 | 38.80 | 66.72 | 15503.00 | 67.92 | 311.33 |
| Universität Zürich | 46 | 16033.77 | 51.62 | 866.75 | 86.49 | 6631.25 | 40.15 | 36.00 | 64.91 | 14864.00 | 67.49 | 310.65 |
| Université Rene Descartes Paris 5 | 47 | 15929.25 | 51.57 | 1022.08 | 89.52 | 5739.83 | 39.09 | 34.80 | 64.14 | 12861.00 | 66.13 | 310.45 |
| Seoul National University | 48 | 14290.75 | 50.89 | 1336.33 | 95.65 | 7814.66 | 41.54 | 24.60 | 57.54 | 10375.00 | 64.43 | 310.06 |
| Università degli Studi di Milano | 49 | 15730.62 | 51.49 | 824.50 | 85.67 | 7388.16 | 41.04 | 35.80 | 64.78 | 13576.00 | 66.61 | 309.59 |
| Lund University | 50 | 16220.78 | 51.69 | 920.25 | 87.53 | 6165.08 | 39.60 | 34.20 | 63.75 | 13550.00 | 66.59 | 309.17 |
| University of Helsinki | 51 | 17666.86 | 52.30 | 839.42 | 85.96 | 6224.25 | 39.67 | 34.40 | 63.88 | 14292.00 | 67.10 | 308.90 |
| McMaster University | 52 | 15327.12 | 51.32 | 784.17 | 84.88 | 6514.33 | 40.01 | 37.40 | 65.82 | 13816.00 | 66.78 | 308.80 |
| Oregon Health and Science University | 53 | 15048.60 | 51.20 | 770.67 | 84.62 | 6582.74 | 40.09 | 37.20 | 65.69 | 13500.00 | 66.56 | 308.16 |
| University of Florida | 54 | 14994.32 | 51.18 | 845.50 | 86.08 | 7130.41 | 40.73 | 33.60 | 63.36 | 13326.00 | 66.44 | 307.80 |
| University of Cincinnati | 55 | 14746.62 | 51.08 | 711.67 | 83.46 | 6075.00 | 39.49 | 38.00 | 66.21 | 12933.00 | 66.17 | 306.41 |
| University of Utah | 56 | 14623.61 | 51.03 | 838.75 | 85.94 | 6672.50 | 40.19 | 33.60 | 63.36 | 12412.00 | 65.82 | 306.35 |
| University of Tokyo | 57 | 15412.33 | 51.36 | 906.58 | 87.27 | 6780.41 | 40.32 | 30.80 | 61.55 | 11808.00 | 65.41 | 305.91 |
| University of Cambridge | 58 | 15170.90 | 51.26 | 679.67 | 82.84 | 5287.17 | 38.56 | 38.20 | 66.34 | 13604.00 | 66.63 | 305.62 |
| University of Alberta | 59 | 13701.23 | 50.64 | 859.83 | 86.36 | 6446.42 | 39.93 | 33.00 | 62.97 | 11854.00 | 65.44 | 305.34 |
| Medical University of Vienna | 60 | 14418.86 | 50.94 | 771.50 | 84.63 | 6762.33 | 40.30 | 34.00 | 63.62 | 11905.00 | 65.48 | 304.97 |
| University of Miami | 61 | 13382.72 | 50.51 | 848.08 | 86.13 | 7030.17 | 40.62 | 31.20 | 61.81 | 11116.00 | 64.94 | 304.00 |
| Case Western Reserve University | 62 | 14944.78 | 51.16 | 710.50 | 83.44 | 6301.67 | 39.76 | 34.00 | 63.62 | 12519.00 | 65.89 | 303.87 |
| University of Maryland, Baltimore | 63 | 14255.87 | 50.87 | 763.83 | 84.48 | 6396.75 | 39.87 | 32.40 | 62.59 | 11635.00 | 65.29 | 303.10 |
| University of Rochester | 64 | 13529.88 | 50.57 | 674.08 | 82.73 | 6127.58 | 39.55 | 34.80 | 64.14 | 12124.00 | 65.62 | 302.61 |
| Radboud University Nijmegen | 65 | 13191.61 | 50.43 | 954.67 | 88.21 | 5508.59 | 38.82 | 29.20 | 60.52 | 10498.00 | 64.52 | 302.49 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VU University of Amsterdam | 66 | 13695.26 | 50.64 | 694.33 | 83.13 | 5073.84 | 38.31 | 34.20 | 63.75 | 12682.00 | 66.00 | 301.83 |
| University of Manchester | 67 | 13122.44 | 50.40 | 736.83 | 83.96 | 6374.00 | 39.84 | 32.60 | 62.72 | 11036.00 | 64.88 | 301.80 |
| Aarhus University | 68 | 13595.21 | 50.60 | 772.92 | 84.66 | 5365.50 | 38.65 | 32.20 | 62.46 | 11495.00 | 65.20 | 301.56 |
| University of Colorado at Denver | 69 | 15093.68 | 51.22 | 532.83 | 79.97 | 5628.74 | 38.96 | 35.80 | 64.78 | 13361.00 | 66.47 | 301.41 |
| Université de Montreal | 70 | 13524.37 | 50.57 | 716.83 | 83.57 | 5530.33 | 38.85 | 32.00 | 62.33 | 11523.00 | 65.22 | 300.52 |
| Università degli Studi di Roma La Sapienza | 71 | 12708.15 | 50.23 | 791.92 | 85.03 | 6537.67 | 40.04 | 29.20 | 60.52 | 10752.00 | 64.69 | 300.50 |
| University of California Davis | 72 | 12835.94 | 50.28 | 647.33 | 82.21 | 5516.25 | 38.83 | 33.60 | 63.36 | 11527.00 | 65.22 | 299.90 |
| University of Oslo | 73 | 12478.92 | 50.13 | 921.67 | 87.56 | 4961.92 | 38.18 | 28.20 | 59.87 | 9739.00 | 64.00 | 299.74 |
| Tel Aviv University | 74 | 12746.50 | 50.24 | 908.50 | 87.31 | 5950.25 | 39.34 | 26.60 | 58.84 | 9344.00 | 63.73 | 299.46 |
| University of Iowa | 75 | 13279.95 | 50.46 | 668.67 | 82.63 | 5548.59 | 38.87 | 31.80 | 62.20 | 11408.00 | 65.14 | 299.29 |
| Technische Universität München | 76 | 11718.26 | 49.81 | 683.67 | 82.92 | 5304.33 | 38.58 | 33.40 | 63.23 | 10630.00 | 64.61 | 299.15 |
| University of Groningen | 77 | 13814.71 | 50.69 | 680.17 | 82.85 | 5123.58 | 38.37 | 30.80 | 61.55 | 10656.00 | 64.63 | 298.08 |
| Uppsala University | 78 | 12358.38 | 50.08 | 723.25 | 83.69 | 4893.83 | 38.10 | 30.40 | 61.29 | 11006.00 | 64.86 | 298.02 |
| Universität Bern | 79 | 13512.01 | 50.56 | 731.00 | 83.84 | 5524.67 | 38.84 | 29.00 | 60.39 | 9881.00 | 64.10 | 297.73 |
| Wake Forest University | 80 | 12819.28 | 50.27 | 544.17 | 80.20 | 5331.67 | 38.61 | 33.80 | 63.49 | 11144.00 | 64.96 | 297.53 |
| Università degli Studi di Napoli Federico II | 81 | 12336.20 | 50.07 | 678.08 | 82.81 | 6067.58 | 39.48 | 29.60 | 60.78 | 9828.00 | 64.06 | 297.20 |
| Universität Tubingen | 82 | 11376.34 | 49.67 | 677.25 | 82.79 | 5536.17 | 38.85 | 31.00 | 61.68 | 9939.00 | 64.14 | 297.14 |
| National and Kapodistrian University of Athens | 83 | 10954.90 | 49.49 | 814.00 | 85.46 | 7057.25 | 40.65 | 25.60 | 58.19 | 8573.00 | 63.21 | 297.00 |
| University of Calgary | 84 | 11141.53 | 49.57 | 683.50 | 82.91 | 5336.00 | 38.62 | 31.20 | 61.81 | 9747.00 | 64.01 | 296.92 |
| Monash University | 85 | 11125.42 | 49.56 | 738.17 | 83.98 | 5052.17 | 38.28 | 29.80 | 60.91 | 9589.00 | 63.90 | 296.63 |
| Université Paris 6 Pierre and Marie Curie | 86 | 12594.75 | 50.18 | 674.83 | 82.75 | 4299.92 | 37.40 | 30.60 | 61.42 | 10339.00 | 64.41 | 296.15 |
| University of Queensland | 87 | 10653.13 | 49.37 | 792.33 | 85.04 | 5094.17 | 38.33 | 27.40 | 59.35 | 9805.00 | 64.05 | 296.14 |
| Yonsei University | 88 | 9566.03 | 48.91 | 1041.33 | 89.90 | 6181.83 | 39.62 | 20.80 | 55.09 | 6937.00 | 62.10 | 295.61 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| National Taiwan University | 89 | 11730.06 | 49.82 | 879.17 | 86.73 | 5707.75 | 39.06 | 23.20 | 56.64 | 8574.00 | 63.21 | 295.45 |
| Wayne State University | 90 | 11110.23 | 49.56 | 603.67 | 81.36 | 5613.17 | 38.94 | 30.80 | 61.55 | 9636.00 | 63.93 | 295.34 |
| University of Illinois Chicago | 91 | 11229.30 | 49.61 | 686.17 | 82.97 | 5371.00 | 38.66 | 28.80 | 60.26 | 9357.00 | 63.74 | 295.23 |
| Università degli Studi di Padova | 92 | 11105.89 | 49.56 | 640.17 | 82.07 | 5744.84 | 39.10 | 29.60 | 60.78 | 9035.00 | 63.52 | 295.02 |
| University of Maastricht | 93 | 11441.20 | 49.70 | 705.33 | 83.34 | 4798.75 | 37.98 | 29.00 | 60.39 | 9108.00 | 63.57 | 294.98 |
| Osaka University | 94 | 11447.67 | 49.70 | 689.58 | 83.03 | 5301.17 | 38.58 | 27.00 | 59.09 | 8894.00 | 63.43 | 293.83 |
| University of California Irvine | 95 | 10150.54 | 49.16 | 534.67 | 80.01 | 4956.41 | 38.17 | 32.00 | 62.33 | 9460.00 | 63.81 | 293.48 |
| The University of Texas Southwestern Medical Center at Dallas | 96 | 11990.99 | 49.93 | 864.08 | 86.44 | 4840.00 | 38.03 | 21.80 | 55.73 | 8538.00 | 63.19 | 293.32 |
| University of New South Wales | 97 | 10203.16 | 49.18 | 707.67 | 83.39 | 4607.17 | 37.76 | 27.80 | 59.61 | 8677.00 | 63.28 | 293.22 |
| The University of Texas Health Science Center at San Antonio | 98 | 10405.11 | 49.26 | 495.58 | 79.25 | 4458.41 | 37.58 | 32.20 | 62.46 | 10140.00 | 64.27 | 292.83 |
| Kyoto University | 99 | 11442.30 | 49.70 | 655.42 | 82.37 | 5244.75 | 38.51 | 26.40 | 58.71 | 8975.00 | 63.48 | 292.76 |
| Universität Basel | 100 | 10603.10 | 49.35 | 584.08 | 80.97 | 4335.50 | 37.44 | 30.40 | 61.29 | 9029.00 | 63.52 | 292.57 |

Table B.3: Engineering, Computing Technology (*ENG*)

| **University** | **Rank** | **JIT**[1] | **Score**[1] | **Total Article Count**[2] | **Score**[2] | **Total Document Count**[3] | **Score**[3] | **H-Index**[4] | **Score**[4] | **Total Citation Count**[5] | **Score**[5] | **TOTAL SCORE** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tsinghua University China | 1 | 11048.32 | 90.00 | 1510.83 | 140.00 | 13616.00 | 65.00 | 27.80 | 77.76 | 12068.00 | 108.54 | 481.29 |
| National University of Singapore | 2 | 10057.98 | 85.88 | 992.33 | 115.38 | 7723.67 | 50.57 | 31.80 | 83.88 | 12284.00 | 109.47 | 445.17 |
| University of California Berkeley | 3 | 8602.05 | 79.81 | 745.83 | 103.67 | 6191.84 | 46.82 | 35.80 | 90.00 | 13563.00 | 115.00 | 435.30 |
| Massachusetts Institute of Technology | 4 | 8875.86 | 80.95 | 796.50 | 106.08 | 7522.66 | 50.08 | 33.00 | 85.71 | 12581.00 | 110.76 | 433.58 |
| Nanyang Technological University | 5 | 9077.52 | 81.79 | 1114.33 | 121.17 | 9076.33 | 53.88 | 26.80 | 76.22 | 9595.00 | 97.85 | 430.92 |
| Georgia Institute of Technology | 6 | 8277.18 | 78.46 | 842.83 | 108.28 | 8393.83 | 52.21 | 29.40 | 80.20 | 10762.00 | 102.89 | 422.05 |
| Zhejiang University | 7 | 7760.93 | 76.31 | 1164.67 | 123.56 | 9569.50 | 55.09 | 22.40 | 69.49 | 8836.00 | 94.57 | 419.02 |
| Shanghai Jiao Tong University | 8 | 8272.30 | 78.44 | 1189.33 | 124.73 | 9448.17 | 54.79 | 22.00 | 68.88 | 8235.00 | 91.97 | 418.82 |
| Harbin Institute of Technology | 9 | 6425.36 | 70.75 | 1153.00 | 123.01 | 11728.16 | 60.38 | 21.40 | 67.96 | 6498.00 | 84.47 | 406.56 |
| Stanford University | 10 | 6647.48 | 71.67 | 618.00 | 97.60 | 6044.66 | 46.46 | 32.60 | 85.10 | 11135.00 | 104.51 | 405.34 |
| National Taiwan University | 11 | 7555.76 | 75.46 | 918.83 | 111.89 | 7336.83 | 49.62 | 23.00 | 70.41 | 7751.00 | 89.88 | 397.25 |
| Seoul National University | 12 | 7613.52 | 75.70 | 915.33 | 111.72 | 6737.33 | 48.15 | 22.60 | 69.80 | 7507.00 | 88.83 | 394.19 |
| University of Illinois Urbana Champaign | 13 | 6687.34 | 71.84 | 707.33 | 101.84 | 6499.83 | 47.57 | 26.40 | 75.61 | 8165.00 | 91.67 | 388.54 |
| University of Michigan Ann Arbor | 14 | 6720.22 | 71.98 | 614.50 | 97.44 | 5609.83 | 45.39 | 27.20 | 76.84 | 8557.00 | 93.36 | 385.00 |
| National Cheng Kung University | 15 | 6963.54 | 72.99 | 930.33 | 112.43 | 6506.17 | 47.59 | 19.80 | 65.51 | 6830.00 | 85.90 | 384.42 |
| Pennsylvania State University | 16 | 5883.04 | 68.49 | 632.00 | 98.27 | 5261.00 | 44.54 | 28.80 | 79.29 | 8117.00 | 91.46 | 382.04 |
| Swiss Federal Institute of Technology ETH Zürich | 17 | 5949.64 | 68.77 | 631.17 | 98.23 | 5421.17 | 44.93 | 27.20 | 76.84 | 7746.00 | 89.86 | 378.62 |
| University of Tokyo | 18 | 6044.50 | 69.16 | 723.00 | 102.59 | 7589.00 | 50.24 | 23.20 | 70.71 | 6571.00 | 84.78 | 377.49 |
| Imperial College | 19 | 5874.82 | 68.46 | 700.00 | 101.50 | 5620.50 | 45.42 | 24.00 | 71.94 | 7540.00 | 88.97 | 376.28 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tohoku University | 20 | 5692.21 | 67.70 | 791.67 | 105.85 | 7415.50 | 49.81 | 20.80 | 67.04 | 5907.00 | 81.91 | 372.31 |
| University of Cambridge | 21 | 5806.11 | 68.17 | 539.67 | 93.88 | 4739.67 | 43.26 | 26.80 | 76.22 | 7800.00 | 90.09 | 371.63 |
| Delft University of Technology | 22 | 5318.12 | 66.14 | 773.67 | 104.99 | 6493.50 | 47.56 | 21.40 | 67.96 | 6031.00 | 82.45 | 369.09 |
| University of Toronto | 23 | 5332.84 | 66.20 | 584.50 | 96.01 | 5117.17 | 44.18 | 25.40 | 74.08 | 6770.00 | 85.64 | 366.12 |
| Purdue University | 24 | 5485.66 | 66.84 | 687.67 | 100.91 | 5931.84 | 46.18 | 22.20 | 69.18 | 5794.00 | 81.42 | 364.53 |
| University of California Los Angeles | 25 | 4712.30 | 63.61 | 460.17 | 90.11 | 4633.17 | 43.00 | 26.80 | 76.22 | 7683.00 | 89.59 | 362.53 |
| University of Texas Austin | 26 | 4563.16 | 62.99 | 534.17 | 93.62 | 5034.16 | 43.98 | 26.00 | 75.00 | 6873.00 | 86.09 | 361.68 |
| école Polytechnique Fédérale de Lausanne | 27 | 4693.13 | 63.54 | 452.83 | 89.76 | 4761.84 | 43.31 | 26.60 | 75.92 | 7258.00 | 87.75 | 360.28 |
| Northwestern University | 28 | 4842.31 | 64.16 | 394.17 | 86.97 | 2873.50 | 38.69 | 28.80 | 79.29 | 7584.00 | 89.16 | 358.26 |
| Peking University | 29 | 4548.01 | 62.93 | 615.50 | 97.48 | 4731.33 | 43.24 | 23.80 | 71.63 | 5815.00 | 81.51 | 356.80 |
| Hong Kong Polytechnic University | 30 | 4961.09 | 64.65 | 717.67 | 102.33 | 5355.00 | 44.77 | 19.20 | 64.59 | 5207.00 | 78.89 | 355.23 |
| Harvard University | 31 | 4959.59 | 64.64 | 389.00 | 86.73 | 2687.50 | 38.23 | 27.80 | 77.76 | 6808.00 | 85.81 | 353.17 |
| Texas A&M University | 32 | 4399.00 | 62.31 | 686.67 | 100.86 | 5145.00 | 44.25 | 21.00 | 67.35 | 5019.00 | 78.07 | 352.85 |
| National Chiao Tung University | 33 | 5269.77 | 65.94 | 640.17 | 98.65 | 5990.17 | 46.32 | 19.20 | 64.59 | 4766.00 | 76.98 | 352.49 |
| City University of Hong Kong | 34 | 5063.31 | 65.08 | 615.33 | 97.48 | 4836.00 | 43.50 | 20.60 | 66.73 | 5230.00 | 78.99 | 351.77 |
| University of Manchester | 35 | 4561.03 | 62.99 | 485.92 | 91.33 | 4529.25 | 42.74 | 21.00 | 67.35 | 6773.00 | 85.65 | 350.06 |
| University of Washington Seattle | 36 | 4252.01 | 61.70 | 373.17 | 85.98 | 3610.50 | 40.49 | 27.80 | 77.76 | 6229.00 | 83.30 | 349.23 |
| Dalian University of Technology | 37 | 3840.14 | 59.98 | 744.83 | 103.62 | 5695.75 | 45.60 | 18.40 | 63.37 | 4256.00 | 74.78 | 347.35 |
| Kyoto University | 38 | 4604.95 | 63.17 | 533.17 | 93.57 | 5650.17 | 45.49 | 20.00 | 65.82 | 4894.00 | 77.53 | 345.58 |
| University of Science and Technology of China | 39 | 4220.81 | 61.57 | 467.83 | 90.47 | 4296.17 | 42.17 | 22.80 | 70.10 | 5644.00 | 80.78 | 345.09 |
| Yonsei University | 40 | 4428.55 | 62.43 | 669.33 | 100.04 | 5272.16 | 44.56 | 18.40 | 63.37 | 4211.00 | 74.58 | 344.99 |
| University of Waterloo | 41 | 4206.69 | 61.51 | 595.83 | 96.55 | 5405.83 | 44.89 | 19.20 | 64.59 | 4672.00 | 76.57 | 344.12 |
| Osaka University | 42 | 4132.64 | 61.20 | 536.50 | 93.73 | 6173.17 | 46.77 | 20.20 | 66.12 | 4592.00 | 76.23 | 344.05 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carnegie Mellon University | 43 | 3727.86 | 59.52 | 441.67 | 89.23 | 5890.67 | 46.08 | 22.60 | 69.80 | 4625.00 | 76.37 | 340.99 |
| University of Florida | 44 | 4212.62 | 61.53 | 498.67 | 91.94 | 4177.50 | 41.88 | 21.00 | 67.35 | 4853.00 | 77.36 | 340.06 |
| Huazhong University of Science and Technology | 45 | 3452.96 | 58.37 | 665.00 | 99.83 | 7556.58 | 50.16 | 16.20 | 60.00 | 3403.00 | 71.09 | 339.45 |
| National Tsing Hua University Taiwan | 46 | 4650.89 | 63.36 | 469.33 | 90.54 | 4363.50 | 42.34 | 20.80 | 67.04 | 4513.00 | 75.89 | 339.17 |
| California Institute of Technology Caltech | 47 | 3824.72 | 59.92 | 316.50 | 83.28 | 4303.66 | 42.19 | 24.20 | 72.24 | 5762.00 | 81.29 | 338.93 |
| University of Maryland | 48 | 4080.68 | 60.98 | 487.17 | 91.39 | 4770.67 | 43.34 | 19.80 | 65.51 | 4884.00 | 77.49 | 338.71 |
| University of California San Diego | 49 | 3995.25 | 60.63 | 449.83 | 89.62 | 4589.50 | 42.89 | 21.80 | 68.57 | 4753.00 | 76.92 | 338.63 |
| Tokyo Institute of Technology | 50 | 4172.05 | 61.37 | 512.17 | 92.58 | 5768.67 | 45.78 | 18.60 | 63.67 | 3934.00 | 73.38 | 336.78 |
| Korea University | 51 | 3689.27 | 59.35 | 610.50 | 97.25 | 4691.67 | 43.14 | 18.40 | 63.37 | 3678.00 | 72.28 | 335.39 |
| Eindhoven University of Technology | 52 | 3744.70 | 59.59 | 412.33 | 87.84 | 4503.50 | 42.68 | 21.60 | 68.27 | 4625.00 | 76.37 | 334.74 |
| University of British Columbia | 53 | 3847.19 | 60.01 | 518.83 | 92.89 | 4405.33 | 42.44 | 18.60 | 63.67 | 4079.00 | 74.01 | 333.03 |
| University of Wisconsin Madison | 54 | 3714.22 | 59.46 | 423.83 | 88.38 | 3520.33 | 40.27 | 21.40 | 67.96 | 4698.00 | 76.69 | 332.76 |
| University of Minnesota | 55 | 3704.19 | 59.42 | 407.25 | 87.59 | 3746.17 | 40.83 | 21.80 | 68.57 | 4563.00 | 76.10 | 332.51 |
| Hong Kong University of Science & Technology | 56 | 3834.11 | 59.96 | 404.00 | 87.44 | 4032.84 | 41.53 | 21.60 | 68.27 | 4379.00 | 75.31 | 332.50 |
| University of Alberta | 57 | 3915.42 | 60.30 | 513.50 | 92.64 | 4191.34 | 41.92 | 18.80 | 63.98 | 3909.00 | 73.28 | 332.11 |
| Jilin University | 58 | 3590.93 | 58.95 | 416.67 | 88.04 | 3943.17 | 41.31 | 20.40 | 66.43 | 4823.00 | 77.23 | 331.95 |
| Tianjin University | 59 | 3708.46 | 59.43 | 479.00 | 91.00 | 5192.00 | 44.37 | 17.80 | 62.45 | 4070.00 | 73.97 | 331.23 |
| Cornell University | 60 | 3737.64 | 59.56 | 335.83 | 84.20 | 3173.83 | 39.42 | 22.60 | 69.80 | 4929.00 | 77.69 | 330.66 |
| Catholic University of Leuven | 61 | 3573.69 | 58.87 | 444.50 | 89.36 | 4291.67 | 42.16 | 19.60 | 65.20 | 4303.00 | 74.98 | 330.58 |
| University of New South Wales | 62 | 3559.17 | 58.81 | 491.00 | 91.57 | 4205.67 | 41.95 | 19.40 | 64.90 | 3818.00 | 72.88 | 330.12 |
| Southeast University China | 63 | 3121.17 | 56.99 | 616.50 | 97.53 | 5192.67 | 44.37 | 17.20 | 61.53 | 3023.00 | 69.45 | 329.87 |
| University of Oxford | 64 | 3781.63 | 59.74 | 383.33 | 86.46 | 3217.17 | 39.53 | 21.00 | 67.35 | 4704.00 | 76.71 | 329.79 |
| University of California Santa Barbara | 65 | 3714.09 | 59.46 | 258.67 | 80.54 | 2944.00 | 38.86 | 23.20 | 70.71 | 5469.00 | 80.02 | 329.59 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fudan University (Shanghai Medical University) | 66 | 3322.43 | 57.83 | 364.67 | 85.57 | 3182.00 | 39.44 | 23.00 | 70.41 | 4470.00 | 75.70 | 328.95 |
| University of California Davis | 67 | 3647.35 | 59.18 | 407.75 | 87.62 | 3395.92 | 39.97 | 20.40 | 66.43 | 4453.00 | 75.63 | 328.82 |
| Ohio State University | 68 | 3707.80 | 59.43 | 448.83 | 89.57 | 3874.34 | 41.14 | 19.00 | 64.29 | 4008.00 | 73.70 | 328.13 |
| University of Queensland | 69 | 3472.34 | 58.45 | 357.83 | 85.25 | 2967.00 | 38.92 | 22.00 | 68.88 | 4609.00 | 76.30 | 327.80 |
| Hanyang University | 70 | 3590.82 | 58.94 | 513.50 | 92.64 | 4531.00 | 42.75 | 17.00 | 61.22 | 3601.00 | 71.95 | 327.50 |
| Arizona State University | 71 | 3466.75 | 58.43 | 359.33 | 85.32 | 3872.67 | 41.14 | 21.00 | 67.35 | 4357.00 | 75.21 | 327.44 |
| University of Southern California | 72 | 3283.48 | 57.67 | 341.33 | 84.46 | 4287.00 | 42.15 | 21.60 | 68.27 | 4006.00 | 73.70 | 326.24 |
| Pohang University of Science and Technology | 73 | 3589.41 | 58.94 | 414.00 | 87.91 | 3137.66 | 39.34 | 20.00 | 65.82 | 4120.00 | 74.19 | 326.19 |
| Nanjing University | 74 | 3372.95 | 58.04 | 375.75 | 86.10 | 2510.50 | 37.80 | 21.60 | 68.27 | 4507.00 | 75.86 | 326.06 |
| Virginia Polytechnic Institute and State University | 75 | 3241.34 | 57.49 | 436.67 | 88.99 | 4599.83 | 42.92 | 18.20 | 63.06 | 3839.00 | 72.97 | 325.43 |
| South China University of Technology | 76 | 2790.89 | 55.61 | 475.00 | 90.81 | 5652.67 | 45.50 | 17.60 | 62.14 | 3122.00 | 69.88 | 323.94 |
| Rice University | 77 | 2786.20 | 55.59 | 237.00 | 79.51 | 1729.50 | 35.89 | 26.80 | 76.22 | 4600.00 | 76.26 | 323.48 |
| Technical University of Denmark | 78 | 3303.82 | 57.75 | 382.92 | 86.44 | 3230.09 | 39.56 | 19.20 | 64.59 | 4273.00 | 74.85 | 323.19 |
| Princeton University | 79 | 3057.41 | 56.72 | 299.83 | 82.49 | 2573.50 | 37.95 | 23.20 | 70.71 | 4304.00 | 74.98 | 322.87 |
| Central South University China | 80 | 2679.89 | 55.15 | 604.50 | 96.96 | 5071.92 | 44.07 | 14.80 | 57.86 | 2877.00 | 68.82 | 322.86 |
| Shandong University | 81 | 3174.55 | 57.21 | 447.83 | 89.52 | 4030.33 | 41.52 | 17.60 | 62.14 | 3377.00 | 70.98 | 321.38 |
| Indian Institute of Technology Kharagpur | 82 | 3305.40 | 57.76 | 489.83 | 91.52 | 3380.33 | 39.93 | 16.40 | 60.31 | 3503.00 | 71.52 | 321.03 |
| North Carolina State University | 83 | 3259.11 | 57.56 | 419.00 | 88.15 | 3593.25 | 40.45 | 18.00 | 62.76 | 3508.00 | 71.54 | 320.47 |
| Technion Israel Institute of Technology | 84 | 3498.12 | 58.56 | 397.67 | 87.14 | 3967.50 | 41.37 | 17.20 | 61.53 | 3438.00 | 71.24 | 319.84 |
| Sharif University of Technology | 85 | 2495.41 | 54.38 | 605.17 | 96.99 | 3975.67 | 41.39 | 14.60 | 57.55 | 2419.00 | 66.84 | 317.15 |
| Politecnico di Milano | 86 | 2867.30 | 55.93 | 432.83 | 88.81 | 4467.42 | 42.59 | 16.40 | 60.31 | 2973.00 | 69.23 | 316.87 |
| University of Hong Kong | 87 | 2930.66 | 56.20 | 344.33 | 84.61 | 3375.84 | 39.92 | 19.20 | 64.59 | 3456.00 | 71.32 | 316.63 |
| Royal Institute of Technology | 88 | 3042.26 | 56.66 | 397.00 | 87.11 | 3396.66 | 39.97 | 17.40 | 61.84 | 3349.00 | 70.86 | 316.43 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Melbourne | 89 | 2840.79 | 55.82 | 294.33 | 82.23 | 2801.00 | 38.51 | 21.60 | 68.27 | 3498.00 | 71.50 | 316.33 |
| Université Paris 6 Pierre and Marie Curie | 90 | 3127.46 | 57.02 | 300.83 | 82.54 | 2782.66 | 38.47 | 19.00 | 64.29 | 4024.00 | 73.77 | 316.08 |
| Technische Universität München | 91 | 2609.77 | 54.86 | 354.75 | 85.10 | 4313.25 | 42.22 | 18.80 | 63.98 | 3107.00 | 69.81 | 315.97 |
| University of Southampton | 92 | 2775.04 | 55.55 | 372.33 | 85.94 | 3790.17 | 40.93 | 18.40 | 63.37 | 3168.00 | 70.07 | 315.86 |
| Ghent University | 93 | 2767.17 | 55.51 | 422.00 | 88.29 | 3397.09 | 39.97 | 17.20 | 61.53 | 3175.00 | 70.10 | 315.42 |
| Universidade de São Paulo | 94 | 3099.76 | 56.90 | 433.33 | 88.83 | 3804.50 | 40.97 | 15.40 | 58.78 | 3126.00 | 69.89 | 315.37 |
| University College London | 95 | 3210.36 | 57.36 | 326.92 | 83.78 | 2840.00 | 38.61 | 18.00 | 62.76 | 3527.00 | 71.63 | 314.13 |
| University of Tehran | 96 | 1897.42 | 51.89 | 584.83 | 96.03 | 3706.92 | 40.73 | 15.40 | 58.78 | 2378.00 | 66.66 | 314.09 |
| Beihang University | 97 | 2180.12 | 53.07 | 599.33 | 96.72 | 5924.00 | 46.16 | 12.40 | 54.18 | 1707.00 | 63.76 | 313.89 |
| Johns Hopkins University | 98 | 2660.13 | 55.07 | 287.17 | 81.89 | 2663.17 | 38.17 | 20.80 | 67.04 | 3538.00 | 71.67 | 313.85 |
| University of Sydney | 99 | 2955.73 | 56.30 | 355.00 | 85.11 | 3355.17 | 39.87 | 17.40 | 61.84 | 3301.00 | 70.65 | 313.77 |
| Columbia University New York | 100 | 2877.64 | 55.97 | 274.50 | 81.29 | 2722.66 | 38.32 | 20.00 | 65.82 | 3678.00 | 72.28 | 313.68 |

Table B.4: Life Sciences (*LIFE*)

| **University** | **Rank** | **JIT**[1] | **Score**[1] | **Total Article Count**[2] | **Score**[2] | **Total Document Count**[3] | **Score**[3] | **H-Index**[4] | **Score**[4] | **Total Citation Count**[5] | **Score**[5] | **TOTAL SCORE** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Harvard University | 1 | 91841.35 | 90.00 | 3014.25 | 140.00 | 18851.33 | 65.00 | 82.00 | 90.00 | 81560.00 | 115.00 | 500.00 |
| Johns Hopkins University | 2 | 38204.87 | 63.60 | 1606.08 | 106.88 | 10853.66 | 51.06 | 52.40 | 72.05 | 34353.00 | 81.57 | 375.16 |
| University of California San Francisco | 3 | 38332.04 | 63.66 | 1383.33 | 101.65 | 8789.58 | 47.46 | 54.60 | 73.38 | 33185.00 | 80.74 | 366.89 |
| University of Washington Seattle | 4 | 33560.04 | 61.31 | 1437.00 | 102.91 | 8668.75 | 47.25 | 50.80 | 71.08 | 29847.00 | 78.38 | 360.93 |
| University of California San Diego | 5 | 32121.27 | 60.60 | 1434.33 | 102.84 | 8322.00 | 46.65 | 50.00 | 70.59 | 28686.00 | 77.56 | 358.24 |
| University of Pennsylvania | 6 | 32711.98 | 60.89 | 1244.67 | 98.38 | 8803.59 | 47.49 | 51.00 | 71.20 | 30613.00 | 78.92 | 356.88 |
| University of Oxford | 7 | 31021.41 | 60.06 | 1352.33 | 100.92 | 7872.58 | 45.86 | 49.20 | 70.11 | 27932.00 | 77.02 | 353.97 |
| University of Tokyo | 8 | 31674.36 | 60.38 | 1400.08 | 102.04 | 9800.08 | 49.22 | 41.00 | 65.13 | 25245.00 | 75.12 | 351.90 |
| Stanford University | 9 | 31659.03 | 60.37 | 1120.67 | 95.47 | 7492.41 | 45.20 | 51.80 | 71.68 | 29216.00 | 77.93 | 350.66 |
| University of Toronto | 10 | 30068.54 | 59.59 | 1337.67 | 100.57 | 8524.17 | 47.00 | 43.80 | 66.83 | 25908.00 | 75.59 | 349.58 |
| University of Michigan Ann Arbor | 11 | 28087.34 | 58.62 | 1229.17 | 98.02 | 7907.17 | 45.92 | 48.80 | 69.87 | 25978.00 | 75.64 | 348.06 |
| University of California Los Angeles | 12 | 29184.27 | 59.16 | 1218.83 | 97.78 | 8034.08 | 46.15 | 46.00 | 68.17 | 27514.00 | 76.73 | 347.97 |
| Yale University | 13 | 29811.92 | 59.47 | 1099.83 | 94.98 | 7524.50 | 45.26 | 46.40 | 68.41 | 26192.00 | 75.79 | 343.90 |
| University of Cambridge | 14 | 27775.37 | 58.46 | 1125.58 | 95.58 | 6769.08 | 43.94 | 48.40 | 69.62 | 24231.00 | 74.40 | 342.01 |
| University College London | 15 | 25618.63 | 57.40 | 1170.33 | 96.64 | 7425.66 | 45.08 | 43.60 | 66.71 | 22316.00 | 73.05 | 338.88 |
| Washington University Saint Louis | 16 | 26996.13 | 58.08 | 1027.50 | 93.28 | 7069.00 | 44.46 | 45.80 | 68.05 | 23628.00 | 73.97 | 337.84 |
| University of Pittsburgh | 17 | 22494.51 | 55.86 | 1128.00 | 95.64 | 8091.83 | 46.25 | 41.80 | 65.62 | 21920.00 | 72.77 | 336.14 |
| Duke University | 18 | 24259.54 | 56.73 | 1074.83 | 94.39 | 6859.17 | 44.10 | 44.40 | 67.20 | 21908.00 | 72.76 | 335.17 |
| Karolinska Institute | 19 | 24004.04 | 56.61 | 1181.67 | 96.90 | 7208.00 | 44.71 | 39.40 | 64.16 | 20523.00 | 71.78 | 334.16 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Imperial College | 20 | 21789.61 | 55.52 | 990.42 | 92.41 | 6401.83 | 43.30 | 42.60 | 66.11 | 19695.00 | 71.19 | 328.52 |
| University of North Carolina Chapel Hill | 21 | 22371.38 | 55.80 | 995.17 | 92.52 | 6666.25 | 43.76 | 40.40 | 64.77 | 20255.00 | 71.59 | 328.44 |
| Cornell University | 22 | 23562.08 | 56.39 | 959.58 | 91.68 | 6666.00 | 43.76 | 40.40 | 64.77 | 20082.00 | 71.46 | 328.06 |
| Massachusetts Institute of Technology | 23 | 23047.29 | 56.14 | 675.67 | 85.00 | 3920.08 | 38.97 | 53.80 | 72.90 | 23248.00 | 73.71 | 326.72 |
| University of California Berkeley | 24 | 24767.95 | 56.98 | 894.25 | 90.14 | 5314.67 | 41.41 | 42.20 | 65.86 | 19575.00 | 71.10 | 325.50 |
| McGill University | 25 | 21772.25 | 55.51 | 971.58 | 91.96 | 6206.50 | 42.96 | 38.80 | 63.80 | 19090.00 | 70.76 | 324.99 |
| Columbia University New York | 26 | 21529.14 | 55.39 | 871.50 | 89.61 | 5936.59 | 42.49 | 42.60 | 66.11 | 19705.00 | 71.20 | 324.79 |
| Kyoto University | 27 | 21022.22 | 55.14 | 937.50 | 91.16 | 7121.67 | 44.55 | 38.00 | 63.32 | 18715.00 | 70.50 | 324.67 |
| University of Wisconsin Madison | 28 | 21426.07 | 55.34 | 930.00 | 90.98 | 6345.17 | 43.20 | 38.80 | 63.80 | 18911.00 | 70.63 | 323.96 |
| University of British Columbia | 29 | 19077.21 | 54.18 | 964.25 | 91.79 | 5913.59 | 42.45 | 36.80 | 62.59 | 17303.00 | 69.50 | 320.50 |
| University of California Davis | 30 | 18899.33 | 54.09 | 915.33 | 90.64 | 5906.08 | 42.44 | 37.80 | 63.19 | 17728.00 | 69.80 | 320.16 |
| Emory University | 31 | 18298.81 | 53.80 | 848.42 | 89.07 | 6120.16 | 42.81 | 39.60 | 64.29 | 16832.00 | 69.16 | 319.12 |
| Osaka University | 32 | 18990.97 | 54.14 | 886.67 | 89.97 | 6424.25 | 43.34 | 35.60 | 61.86 | 15482.00 | 68.21 | 317.51 |
| University of Copenhagen | 33 | 16487.36 | 52.91 | 1026.75 | 93.26 | 5191.75 | 41.19 | 34.80 | 61.37 | 15521.00 | 68.23 | 316.97 |
| Vanderbilt University | 34 | 18683.74 | 53.99 | 875.42 | 89.70 | 5499.50 | 41.73 | 35.60 | 61.86 | 14778.00 | 67.71 | 314.98 |
| New York University | 35 | 18003.20 | 53.65 | 715.75 | 85.95 | 5118.67 | 41.06 | 40.00 | 64.53 | 15935.00 | 68.53 | 313.72 |
| University of Melbourne | 36 | 16742.97 | 53.03 | 915.67 | 90.65 | 5270.00 | 41.33 | 33.80 | 60.77 | 14411.00 | 67.45 | 313.22 |
| Universität Zürich | 37 | 17919.47 | 53.61 | 760.92 | 87.01 | 4825.58 | 40.55 | 37.60 | 63.07 | 15223.00 | 68.02 | 312.27 |
| Utrecht University | 38 | 17799.33 | 53.55 | 837.42 | 88.81 | 4987.25 | 40.83 | 33.40 | 60.53 | 15482.00 | 68.21 | 311.93 |
| University of Chicago | 39 | 16861.46 | 53.09 | 722.33 | 86.10 | 4528.75 | 40.04 | 38.60 | 63.68 | 14775.00 | 67.71 | 310.61 |
| Seoul National University | 40 | 14317.93 | 51.84 | 1007.67 | 92.81 | 5800.67 | 42.25 | 27.40 | 56.89 | 12320.00 | 65.97 | 309.76 |
| Ohio State University | 41 | 15488.07 | 52.41 | 770.08 | 87.22 | 5460.75 | 41.66 | 34.40 | 61.13 | 14100.00 | 67.23 | 309.66 |
| Universidade de São Paulo | 42 | 12985.60 | 51.18 | 1083.50 | 94.59 | 7015.50 | 44.37 | 23.40 | 54.46 | 10682.00 | 64.81 | 309.41 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Helsinki | 43 | 16173.94 | 52.75 | 794.25 | 87.79 | 4882.00 | 40.65 | 34.20 | 61.01 | 14002.00 | 67.16 | 309.36 |
| University of Minnesota | 44 | 15812.64 | 52.57 | 769.17 | 87.20 | 5186.92 | 41.18 | 34.40 | 61.13 | 14035.00 | 67.18 | 309.27 |
| Northwestern University | 45 | 16065.86 | 52.70 | 693.50 | 85.42 | 4919.83 | 40.72 | 35.80 | 61.98 | 13972.00 | 67.14 | 307.96 |
| Ludwig Maximilians Universität München | 46 | 15219.87 | 52.28 | 682.67 | 85.17 | 4829.41 | 40.56 | 36.40 | 62.35 | 14397.00 | 67.44 | 307.79 |
| University of Florida | 47 | 13930.81 | 51.65 | 822.17 | 88.45 | 5434.08 | 41.61 | 31.00 | 59.07 | 13107.00 | 66.52 | 307.30 |
| University of Edinburgh | 48 | 15292.26 | 52.32 | 711.17 | 85.84 | 4311.17 | 39.66 | 36.80 | 62.59 | 13213.00 | 66.60 | 307.00 |
| Boston University | 49 | 14539.91 | 51.95 | 650.92 | 84.42 | 4312.83 | 39.66 | 37.00 | 62.71 | 13483.00 | 66.79 | 305.53 |
| King's College London | 50 | 14151.11 | 51.76 | 665.58 | 84.77 | 4641.59 | 40.23 | 35.80 | 61.98 | 13248.00 | 66.62 | 305.36 |
| Ruprecht Karls Universität Heidelberg | 51 | 14390.36 | 51.87 | 718.25 | 86.00 | 4389.59 | 39.79 | 33.00 | 60.28 | 12178.00 | 65.87 | 303.82 |
| University of Manchester | 52 | 14230.64 | 51.80 | 656.58 | 84.55 | 4759.00 | 40.44 | 33.20 | 60.40 | 12615.00 | 66.18 | 303.37 |
| University of Queensland | 53 | 13506.69 | 51.44 | 756.33 | 86.90 | 4402.58 | 39.82 | 30.40 | 58.71 | 11627.00 | 65.48 | 302.34 |
| Université Paris 6 Pierre and Marie Curie | 54 | 15082.49 | 52.21 | 692.33 | 85.39 | 4139.25 | 39.36 | 31.20 | 59.19 | 11779.00 | 65.58 | 301.74 |
| University of Alabama Birmingham | 55 | 13284.11 | 51.33 | 598.33 | 83.18 | 4454.42 | 39.91 | 34.00 | 60.89 | 11709.00 | 65.53 | 300.84 |
| Uppsala University | 56 | 14457.29 | 51.91 | 685.33 | 85.23 | 4029.16 | 39.16 | 30.40 | 58.71 | 11547.00 | 65.42 | 300.43 |
| Pennsylvania State University | 57 | 12117.16 | 50.76 | 617.58 | 83.64 | 3985.09 | 39.09 | 31.40 | 59.31 | 14480.00 | 67.50 | 300.29 |
| University of California Irvine | 58 | 12701.44 | 51.04 | 612.25 | 83.51 | 3809.75 | 38.78 | 34.40 | 61.13 | 11819.00 | 65.61 | 300.08 |
| University of Utah | 59 | 13274.70 | 51.33 | 608.33 | 83.42 | 4193.75 | 39.45 | 33.20 | 60.40 | 11537.00 | 65.41 | 300.01 |
| University of Sydney | 60 | 12004.12 | 50.70 | 761.50 | 87.02 | 4346.34 | 39.72 | 28.40 | 57.49 | 10649.00 | 64.78 | 299.72 |
| Université de Montreal | 61 | 12977.65 | 51.18 | 680.83 | 85.12 | 4183.58 | 39.43 | 31.20 | 59.19 | 10620.00 | 64.76 | 299.69 |
| University of Southern California | 62 | 12770.80 | 51.08 | 586.42 | 82.90 | 3765.00 | 38.70 | 33.40 | 60.53 | 11942.00 | 65.70 | 298.91 |
| Leiden University | 63 | 12595.81 | 50.99 | 613.50 | 83.54 | 3873.25 | 38.89 | 32.60 | 60.04 | 11416.00 | 65.33 | 298.79 |
| Case Western Reserve University | 64 | 12789.93 | 51.09 | 591.67 | 83.03 | 4312.67 | 39.66 | 31.60 | 59.43 | 11193.00 | 65.17 | 298.38 |
| Université Rene Descartes Paris 5 | 65 | 13263.82 | 51.32 | 717.08 | 85.98 | 3665.09 | 38.53 | 29.80 | 58.34 | 9706.00 | 64.12 | 298.28 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Maryland, Baltimore | 66 | 12573.57 | 50.98 | 637.67 | 84.11 | 4234.08 | 39.52 | 30.40 | 58.71 | 10863.00 | 64.94 | 298.25 |
| Università degli Studi di Milano | 67 | 11920.61 | 50.66 | 654.25 | 84.50 | 4445.42 | 39.89 | 30.00 | 58.46 | 10365.00 | 64.58 | 298.09 |
| University of Amsterdam | 68 | 12129.49 | 50.76 | 656.83 | 84.56 | 3809.66 | 38.78 | 30.80 | 58.95 | 10751.00 | 64.86 | 297.91 |
| Universität Tubingen | 69 | 12301.97 | 50.85 | 618.25 | 83.65 | 3907.25 | 38.95 | 31.40 | 59.31 | 10691.00 | 64.81 | 297.58 |
| National University of Singapore | 70 | 12246.47 | 50.82 | 698.25 | 85.53 | 3860.17 | 38.87 | 29.00 | 57.86 | 9291.00 | 63.82 | 296.90 |
| Lund University | 71 | 12525.52 | 50.96 | 556.83 | 82.21 | 3804.50 | 38.77 | 31.40 | 59.31 | 11466.00 | 65.36 | 296.61 |
| Erasmus University | 72 | 11620.85 | 50.51 | 543.83 | 81.90 | 3197.33 | 37.71 | 34.20 | 61.01 | 9811.00 | 64.19 | 295.33 |
| Radboud University Nijmegen | 73 | 11761.62 | 50.58 | 617.50 | 83.64 | 3120.58 | 37.58 | 31.20 | 59.19 | 9588.00 | 64.03 | 295.02 |
| University of Iowa | 74 | 12142.04 | 50.77 | 525.58 | 81.47 | 3868.84 | 38.89 | 30.40 | 58.71 | 10310.00 | 64.54 | 294.38 |
| University of Alberta | 75 | 11059.31 | 50.23 | 622.17 | 83.74 | 3948.33 | 39.02 | 27.80 | 57.13 | 9572.00 | 64.02 | 294.15 |
| Yeshiva University | 76 | 12166.68 | 50.78 | 495.42 | 80.76 | 3337.25 | 37.96 | 32.00 | 59.68 | 9902.00 | 64.25 | 293.43 |
| Technische Universität München | 77 | 10258.03 | 49.84 | 528.92 | 81.55 | 2943.83 | 37.27 | 32.80 | 60.16 | 9828.00 | 64.20 | 293.03 |
| Ghent University | 78 | 9462.02 | 49.45 | 669.42 | 84.86 | 3415.34 | 38.09 | 26.20 | 56.16 | 9016.00 | 63.63 | 292.18 |
| Oregon Health and Science University | 79 | 10450.59 | 49.93 | 469.33 | 80.15 | 3458.16 | 38.17 | 31.00 | 59.07 | 9287.00 | 63.82 | 291.14 |
| Tel Aviv University | 80 | 10977.01 | 50.19 | 567.50 | 82.46 | 3513.25 | 38.27 | 27.20 | 56.77 | 8429.00 | 63.21 | 290.90 |
| Aarhus University | 81 | 9606.32 | 49.52 | 586.08 | 82.90 | 3205.33 | 37.73 | 27.80 | 57.13 | 8541.00 | 63.29 | 290.56 |
| University of Illinois Urbana Champaign | 82 | 10472.72 | 49.95 | 538.58 | 81.78 | 3284.00 | 37.87 | 28.60 | 57.61 | 8485.00 | 63.25 | 290.46 |
| Rockefeller University | 83 | 11699.57 | 50.55 | 314.83 | 76.52 | 2138.67 | 35.87 | 38.20 | 63.44 | 9635.00 | 64.07 | 290.44 |
| Università degli Studi di Roma La Sapienza | 84 | 10715.28 | 50.07 | 543.17 | 81.89 | 3718.42 | 38.62 | 26.60 | 56.40 | 8641.00 | 63.36 | 290.34 |
| Monash University | 85 | 9592.12 | 49.51 | 552.67 | 82.11 | 3475.33 | 38.20 | 28.20 | 57.37 | 8213.00 | 63.06 | 290.25 |
| Université Paris XI Sud | 86 | 10736.54 | 50.08 | 529.00 | 81.55 | 3061.33 | 37.48 | 28.80 | 57.74 | 8404.00 | 63.19 | 290.04 |
| University of Virginia | 87 | 10611.74 | 50.01 | 410.50 | 78.77 | 3092.17 | 37.53 | 32.00 | 59.68 | 9329.00 | 63.85 | 289.84 |
| University of Rochester | 88 | 10427.47 | 49.92 | 485.83 | 80.54 | 3330.00 | 37.95 | 29.00 | 57.86 | 8656.00 | 63.37 | 289.64 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tohoku University | 89 | 10078.40 | 49.75 | 547.67 | 81.99 | 4167.25 | 39.41 | 24.80 | 55.31 | 8063.00 | 62.95 | 289.41 |
| Kyushu University | 90 | 9812.38 | 49.62 | 526.17 | 81.49 | 3794.75 | 38.76 | 26.80 | 56.52 | 7793.00 | 62.76 | 289.15 |
| University of New South Wales | 91 | 8747.61 | 49.10 | 568.67 | 82.49 | 3215.17 | 37.75 | 27.00 | 56.64 | 7604.00 | 62.63 | 288.60 |
| National Taiwan University | 92 | 9408.25 | 49.42 | 654.00 | 84.49 | 3197.42 | 37.71 | 23.20 | 54.34 | 7449.00 | 62.52 | 288.49 |
| University of Cincinnati | 93 | 9387.72 | 49.41 | 471.83 | 80.21 | 3253.17 | 37.81 | 28.80 | 57.74 | 8546.00 | 63.29 | 288.46 |
| Universitat de Barcelona | 94 | 9095.15 | 49.27 | 575.50 | 82.65 | 3367.50 | 38.01 | 24.80 | 55.31 | 7992.00 | 62.90 | 288.14 |
| The University of Texas Southwestern Medical Center at Dallas | 95 | 10990.95 | 50.20 | 559.08 | 82.26 | 2647.34 | 36.76 | 25.20 | 55.55 | 8518.00 | 63.27 | 288.05 |
| Swiss Federal Institute of Technology ETH Zürich | 96 | 10077.08 | 49.75 | 441.83 | 79.50 | 2568.34 | 36.62 | 30.20 | 58.58 | 8849.00 | 63.51 | 287.97 |
| University of Groningen | 97 | 9492.99 | 49.46 | 510.83 | 81.13 | 3102.92 | 37.55 | 27.00 | 56.64 | 8309.00 | 63.13 | 287.91 |
| Universität Basel | 98 | 9202.95 | 49.32 | 477.42 | 80.34 | 2800.50 | 37.02 | 29.20 | 57.98 | 8196.00 | 63.05 | 287.71 |
| Zhejiang University | 99 | 7807.59 | 48.63 | 756.42 | 86.90 | 3370.25 | 38.02 | 20.00 | 52.40 | 6350.00 | 61.74 | 287.69 |
| University of Illinois Chicago | 100 | 9455.53 | 49.45 | 473.08 | 80.24 | 3619.08 | 38.45 | 26.60 | 56.40 | 8189.00 | 63.04 | 287.58 |

Table B.5: Natural Sciences ($SCI$)

| **University** | **Rank** | **JIT**[1] | **Score**[1] | **Total Article Count**[2] | **Score**[2] | **Total Document Count**[3] | **Score**[3] | **H-Index**[4] | **Score**[4] | **Total Citation Count**[5] | **Score**[5] | **TOTAL SCORE** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of California Berkeley | 1 | 62335.08 | 88.18 | 2802.83 | 135.39 | 16169.92 | 60.11 | 70.40 | 84.15 | 57846.00 | 110.77 | 478.59 |
| Harvard University | 2 | 64921.38 | 90.00 | 2263.25 | 122.36 | 11080.42 | 51.12 | 79.40 | 90.00 | 62380.00 | 115.00 | 468.48 |
| University of Tokyo | 3 | 57776.88 | 84.98 | 2994.00 | 140.00 | 18941.75 | 65.00 | 53.40 | 73.09 | 40461.00 | 94.56 | 457.64 |
| Massachusetts Institute of Technology | 4 | 50745.67 | 80.04 | 2096.25 | 118.33 | 13036.91 | 54.57 | 66.80 | 81.81 | 48664.00 | 102.21 | 436.96 |
| California Institute of Technology Caltech | 5 | 49565.25 | 79.21 | 2161.33 | 119.90 | 13648.75 | 55.65 | 62.60 | 79.08 | 37311.00 | 91.63 | 425.47 |
| Stanford University | 6 | 44249.29 | 75.48 | 1838.17 | 112.10 | 10804.59 | 50.63 | 66.60 | 81.68 | 44081.00 | 97.94 | 417.83 |
| University of Cambridge | 7 | 40281.87 | 72.69 | 1922.08 | 114.13 | 10892.33 | 50.79 | 55.40 | 74.39 | 37614.00 | 91.91 | 403.91 |
| University of Oxford | 8 | 37727.16 | 70.89 | 1980.08 | 115.53 | 9803.75 | 48.86 | 51.40 | 71.79 | 31214.00 | 85.94 | 393.02 |
| Kyoto University | 9 | 37029.63 | 70.40 | 2107.92 | 118.61 | 13297.50 | 55.03 | 44.00 | 66.98 | 26700.00 | 81.73 | 392.76 |
| University of California Los Angeles | 10 | 35921.94 | 69.62 | 1711.17 | 109.04 | 9650.08 | 48.59 | 55.80 | 74.65 | 34673.00 | 89.17 | 391.08 |
| University of Michigan Ann Arbor | 11 | 34399.11 | 68.55 | 1736.25 | 109.64 | 10196.92 | 49.56 | 50.20 | 71.01 | 32488.00 | 87.13 | 385.90 |
| University of Washington Seattle | 12 | 32738.47 | 67.39 | 1621.50 | 106.87 | 8621.92 | 46.78 | 56.00 | 74.78 | 32741.00 | 87.36 | 383.19 |
| University of California San Diego | 13 | 33370.83 | 67.83 | 1619.83 | 106.83 | 8945.83 | 47.35 | 49.00 | 70.23 | 28152.00 | 83.09 | 375.33 |
| Pennsylvania State University | 14 | 28278.94 | 64.25 | 1549.33 | 105.13 | 9260.08 | 47.90 | 50.40 | 71.14 | 25817.00 | 80.91 | 369.34 |
| Université Paris 6 Pierre and Marie Curie | 15 | 29876.80 | 65.38 | 1719.83 | 109.25 | 9327.67 | 48.02 | 45.40 | 67.89 | 23531.00 | 78.78 | 369.32 |
| Tohoku University | 16 | 26431.64 | 62.96 | 1739.33 | 109.72 | 12202.83 | 53.10 | 39.20 | 63.86 | 20014.00 | 75.50 | 365.13 |
| University of Wisconsin Madison | 17 | 29555.99 | 65.15 | 1497.50 | 103.88 | 8631.75 | 46.79 | 45.20 | 67.76 | 25018.00 | 80.16 | 363.75 |
| University of Maryland | 18 | 27856.25 | 63.96 | 1540.25 | 104.91 | 8513.09 | 46.59 | 45.80 | 68.15 | 23375.00 | 78.63 | 362.24 |
| Imperial College | 19 | 27076.91 | 63.41 | 1494.75 | 103.82 | 8244.50 | 46.11 | 47.20 | 69.06 | 24283.00 | 79.48 | 361.88 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Johns Hopkins University | 20 | 29274.13 | 64.95 | 1343.08 | 100.16 | 7146.92 | 44.17 | 50.80 | 71.40 | 25595.00 | 80.70 | 361.39 |
| Osaka University | 21 | 28187.29 | 64.19 | 1573.42 | 105.71 | 11660.42 | 52.14 | 39.20 | 63.86 | 19807.00 | 75.31 | 361.21 |
| Peking University | 22 | 22382.82 | 60.11 | 1921.50 | 114.12 | 10015.58 | 49.24 | 38.00 | 63.08 | 18767.00 | 74.34 | 360.88 |
| University of Toronto | 23 | 27445.05 | 63.67 | 1481.75 | 103.50 | 7671.50 | 45.10 | 45.20 | 67.76 | 24571.00 | 79.75 | 359.78 |
| Swiss Federal Institute of Technology ETH Zürich | 24 | 26751.56 | 63.18 | 1575.33 | 105.76 | 8503.50 | 46.57 | 42.60 | 66.07 | 22738.00 | 78.04 | 359.62 |
| Columbia University New York | 25 | 26917.53 | 63.30 | 1240.50 | 97.68 | 6864.67 | 43.67 | 51.40 | 71.79 | 26035.00 | 81.11 | 357.56 |
| University of Texas Austin | 26 | 25871.43 | 62.56 | 1427.50 | 102.19 | 8438.08 | 46.45 | 44.20 | 67.11 | 22910.00 | 78.20 | 356.52 |
| Princeton University | 27 | 26437.13 | 62.96 | 1256.67 | 98.07 | 7391.34 | 44.60 | 49.80 | 70.75 | 23516.00 | 78.76 | 355.15 |
| University of Illinois Urbana Champaign | 28 | 27578.64 | 63.76 | 1324.08 | 99.70 | 8515.41 | 46.59 | 44.00 | 66.98 | 22786.00 | 78.08 | 355.11 |
| Université Paris XI Sud | 29 | 25251.67 | 62.13 | 1637.92 | 107.27 | 8516.33 | 46.59 | 40.40 | 64.64 | 18639.00 | 74.22 | 354.84 |
| Yale University | 30 | 28562.05 | 64.45 | 1186.67 | 96.38 | 6444.75 | 42.93 | 50.80 | 71.40 | 23278.00 | 78.54 | 353.71 |
| Cornell University | 31 | 27100.06 | 63.43 | 1209.58 | 96.93 | 7336.75 | 44.51 | 48.20 | 69.71 | 23621.00 | 78.86 | 353.44 |
| University of Arizona | 32 | 26512.38 | 63.01 | 1301.67 | 99.16 | 8275.92 | 46.17 | 46.80 | 68.80 | 20874.00 | 76.30 | 353.44 |
| Tsinghua University China | 33 | 19431.12 | 58.04 | 1702.83 | 108.84 | 10308.25 | 49.76 | 36.80 | 62.30 | 18280.00 | 73.88 | 352.81 |
| University of California Santa Barbara | 34 | 25802.99 | 62.51 | 1151.50 | 95.53 | 7042.67 | 43.99 | 48.40 | 69.84 | 24169.00 | 79.37 | 351.25 |
| University of Colorado Boulder | 35 | 23509.68 | 60.90 | 1365.50 | 100.70 | 7639.42 | 45.04 | 46.60 | 68.67 | 20468.00 | 75.92 | 351.23 |
| Zhejiang University | 36 | 18470.62 | 57.36 | 1810.42 | 111.43 | 10686.92 | 50.42 | 31.60 | 58.92 | 16746.00 | 72.45 | 350.59 |
| University of Science and Technology of China | 37 | 21006.83 | 59.14 | 1654.33 | 107.67 | 9292.25 | 47.96 | 36.80 | 62.30 | 16497.00 | 72.22 | 349.29 |
| Northwestern University | 38 | 25053.94 | 61.99 | 1156.67 | 95.66 | 6869.33 | 43.68 | 47.20 | 69.06 | 22195.00 | 77.53 | 347.92 |
| Lomonosov Moscow State University | 39 | 15158.54 | 55.04 | 2046.83 | 117.14 | 12017.66 | 52.77 | 26.60 | 55.66 | 9223.00 | 65.44 | 346.05 |
| University College London | 40 | 24203.36 | 61.39 | 1440.08 | 102.50 | 6985.50 | 43.89 | 38.80 | 63.60 | 18511.00 | 74.10 | 345.47 |
| Ohio State University | 41 | 23073.18 | 60.60 | 1268.58 | 98.36 | 7040.17 | 43.98 | 44.60 | 67.37 | 19620.00 | 75.13 | 345.44 |
| Seoul National University | 42 | 20859.24 | 59.04 | 1472.83 | 103.29 | 8199.75 | 46.03 | 36.40 | 62.04 | 16792.00 | 72.49 | 342.89 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Pennsylvania | 43 | 24181.75 | 61.38 | 1025.50 | 92.49 | 5687.67 | 41.60 | 48.60 | 69.97 | 21719.00 | 77.09 | 342.52 |
| Nanjing University | 44 | 18280.54 | 57.23 | 1712.08 | 109.06 | 8909.17 | 47.28 | 31.40 | 58.79 | 14264.00 | 70.14 | 342.50 |
| Tokyo Institute of Technology | 45 | 21507.61 | 59.50 | 1328.33 | 99.80 | 9052.67 | 47.54 | 36.80 | 62.30 | 15738.00 | 71.51 | 340.64 |
| University of Chicago | 46 | 24017.75 | 61.26 | 987.17 | 91.57 | 5897.00 | 41.97 | 47.40 | 69.19 | 20069.00 | 75.55 | 339.53 |
| University of Manchester | 47 | 21751.05 | 59.67 | 1219.42 | 97.17 | 6970.25 | 43.86 | 38.20 | 63.21 | 18471.00 | 74.06 | 337.97 |
| University of California Davis | 48 | 22339.59 | 60.08 | 1124.75 | 94.89 | 6409.25 | 42.87 | 40.00 | 64.38 | 18652.00 | 74.23 | 336.44 |
| National University of Singapore | 49 | 18156.21 | 57.14 | 1367.25 | 100.74 | 7208.67 | 44.28 | 35.20 | 61.26 | 17007.00 | 72.69 | 336.11 |
| University of British Columbia | 50 | 20618.33 | 58.87 | 1210.58 | 96.96 | 6301.17 | 42.68 | 39.20 | 63.86 | 17936.00 | 73.56 | 335.93 |
| Texas A&M University | 51 | 18523.64 | 57.40 | 1236.42 | 97.58 | 7040.59 | 43.99 | 38.00 | 63.08 | 16243.00 | 71.98 | 334.03 |
| University of Minnesota | 52 | 19843.55 | 58.33 | 1118.42 | 94.73 | 6656.50 | 43.31 | 37.20 | 62.56 | 17312.00 | 72.98 | 331.90 |
| University of Florida | 53 | 18825.29 | 57.61 | 1104.50 | 94.40 | 6830.92 | 43.61 | 38.20 | 63.21 | 16579.00 | 72.30 | 331.13 |
| National Taiwan University | 54 | 17817.57 | 56.90 | 1337.25 | 100.01 | 7486.75 | 44.77 | 32.00 | 59.18 | 14268.00 | 70.14 | 331.01 |
| Purdue University | 55 | 18068.58 | 57.08 | 1059.17 | 93.30 | 6691.25 | 43.37 | 38.60 | 63.47 | 16069.00 | 71.82 | 329.04 |
| University of Paris Diderot (Paris 7) | 56 | 17953.73 | 57.00 | 1194.75 | 96.58 | 5436.50 | 41.15 | 39.00 | 63.73 | 13837.00 | 69.74 | 328.19 |
| Georgia Institute of Technology | 57 | 15122.58 | 55.01 | 986.42 | 91.55 | 7000.91 | 43.92 | 39.80 | 64.25 | 17607.00 | 73.25 | 327.98 |
| Duke University | 58 | 17911.67 | 56.97 | 899.67 | 89.45 | 5260.17 | 40.84 | 42.80 | 66.20 | 18307.00 | 73.91 | 327.37 |
| Universidade de São Paulo | 59 | 15887.06 | 55.55 | 1311.83 | 99.40 | 7841.00 | 45.40 | 31.20 | 58.66 | 12275.00 | 68.28 | 327.29 |
| University of Edinburgh | 60 | 19017.37 | 57.75 | 976.17 | 91.30 | 5437.00 | 41.15 | 40.60 | 64.77 | 16077.00 | 71.83 | 326.80 |
| Università degli Studi di Padova | 61 | 17335.57 | 56.57 | 1143.67 | 95.34 | 5933.34 | 42.03 | 37.00 | 62.43 | 12786.00 | 68.76 | 325.12 |
| Fudan University (Shanghai Medical University) | 62 | 14993.31 | 54.92 | 1192.33 | 96.52 | 6366.59 | 42.79 | 33.40 | 60.09 | 13354.00 | 69.29 | 323.61 |
| école Polytechnique Fédérale de Lausanne | 63 | 16699.30 | 56.12 | 884.17 | 89.08 | 5906.17 | 41.98 | 40.20 | 64.51 | 16104.00 | 71.85 | 323.54 |
| Nagoya University | 64 | 17225.41 | 56.49 | 1069.42 | 93.55 | 7274.00 | 44.40 | 33.60 | 60.22 | 12879.00 | 68.85 | 323.50 |
| Università degli Studi di Roma La Sapienza | 65 | 17666.53 | 56.80 | 1084.92 | 93.92 | 6726.33 | 43.43 | 34.80 | 61.00 | 12064.00 | 68.09 | 323.24 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of California Irvine | 66 | 17227.61 | 56.49 | 966.50 | 91.07 | 5399.75 | 41.09 | 38.60 | 63.47 | 14922.00 | 70.75 | 322.86 |
| Rutgers University | 67 | 17081.91 | 56.39 | 971.50 | 91.19 | 5623.83 | 41.48 | 37.20 | 62.56 | 14216.00 | 70.09 | 321.71 |
| Utrecht University | 68 | 16195.74 | 55.76 | 1014.17 | 92.22 | 5386.00 | 41.06 | 35.60 | 61.52 | 15301.00 | 71.10 | 321.67 |
| Ludwig Maximilians Universität München | 69 | 17207.96 | 56.48 | 917.25 | 89.88 | 5210.84 | 40.75 | 38.80 | 63.60 | 14844.00 | 70.68 | 321.38 |
| Jilin University | 70 | 12330.27 | 53.05 | 1389.92 | 101.29 | 6801.00 | 43.56 | 26.60 | 55.66 | 10333.00 | 66.47 | 320.03 |
| McGill University | 71 | 17340.11 | 56.57 | 937.08 | 90.36 | 5356.08 | 41.01 | 36.20 | 61.91 | 13239.00 | 69.18 | 319.02 |
| Universitat de Barcelona | 72 | 16761.13 | 56.16 | 1048.33 | 93.04 | 5717.50 | 41.65 | 32.20 | 59.31 | 12642.00 | 68.62 | 318.78 |
| University of Bristol | 73 | 16642.29 | 56.08 | 937.67 | 90.37 | 5689.83 | 41.60 | 34.00 | 60.48 | 12806.00 | 68.78 | 317.30 |
| Technische Universität München | 74 | 14800.35 | 54.78 | 1033.42 | 92.68 | 5530.58 | 41.32 | 32.60 | 59.57 | 11910.00 | 67.94 | 316.29 |
| Ruprecht Karls Universität Heidelberg | 75 | 16489.07 | 55.97 | 921.42 | 89.98 | 4802.25 | 40.03 | 36.20 | 61.91 | 12309.00 | 68.31 | 316.20 |
| Michigan State University | 76 | 15028.09 | 54.94 | 895.67 | 89.36 | 5436.00 | 41.15 | 36.40 | 62.04 | 12387.00 | 68.39 | 315.88 |
| Nanyang Technological University | 77 | 12248.06 | 52.99 | 1128.33 | 94.97 | 5896.08 | 41.96 | 30.40 | 58.14 | 11310.00 | 67.38 | 315.45 |
| Universidad Nacional Autónoma de México | 78 | 14006.37 | 54.23 | 1157.67 | 95.68 | 7333.75 | 44.50 | 26.60 | 55.66 | 8870.00 | 65.11 | 315.18 |
| Shanghai Jiao Tong University | 79 | 11622.41 | 52.55 | 1155.00 | 95.62 | 6638.75 | 43.28 | 28.00 | 56.58 | 11049.00 | 67.14 | 315.16 |
| Nankai University | 80 | 11778.70 | 52.66 | 1115.33 | 94.66 | 5839.51 | 41.86 | 31.60 | 58.92 | 10473.00 | 66.60 | 314.70 |
| Washington University Saint Louis | 81 | 15926.70 | 55.58 | 700.33 | 84.64 | 4013.42 | 38.64 | 40.60 | 64.77 | 15141.00 | 70.95 | 314.58 |
| Australian National University | 82 | 16047.48 | 55.66 | 886.00 | 89.12 | 6031.75 | 42.20 | 32.20 | 59.31 | 11857.00 | 67.89 | 314.19 |
| Iowa State University | 83 | 14674.33 | 54.70 | 807.67 | 87.23 | 5138.83 | 40.63 | 37.00 | 62.43 | 12362.00 | 68.36 | 313.35 |
| University of California Santa Cruz | 84 | 15695.01 | 55.41 | 665.00 | 83.79 | 3927.16 | 38.49 | 42.20 | 65.81 | 13433.00 | 69.36 | 312.86 |
| University of Hawaii at Manoa | 85 | 15176.86 | 55.05 | 767.00 | 86.25 | 4433.67 | 39.38 | 38.40 | 63.34 | 12451.00 | 68.45 | 312.47 |
| New York University | 86 | 14404.86 | 54.51 | 794.67 | 86.92 | 3949.42 | 38.53 | 38.20 | 63.21 | 12745.00 | 68.72 | 311.88 |
| University of North Carolina Chapel Hill | 87 | 14500.10 | 54.57 | 772.67 | 86.39 | 4226.17 | 39.02 | 36.20 | 61.91 | 14113.00 | 70.00 | 311.88 |
| Arizona State University | 88 | 14007.20 | 54.23 | 825.83 | 87.67 | 5019.75 | 40.42 | 34.60 | 60.87 | 12150.00 | 68.17 | 311.35 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Sydney | 89 | 13955.28 | 54.19 | 851.58 | 88.29 | 5318.42 | 40.94 | 32.80 | 59.70 | 11582.00 | 67.64 | 310.76 |
| Boston University | 90 | 13834.30 | 54.11 | 779.58 | 86.56 | 4374.34 | 39.28 | 36.00 | 61.78 | 12443.00 | 68.44 | 310.15 |
| Università di Bologna | 91 | 14381.43 | 54.49 | 918.08 | 89.90 | 5396.75 | 41.08 | 30.20 | 58.01 | 10275.00 | 66.42 | 309.89 |
| Durham University | 92 | 13610.27 | 53.95 | 784.17 | 86.67 | 4885.75 | 40.18 | 35.80 | 61.65 | 11253.00 | 67.33 | 309.77 |
| Catholic University of Leuven | 93 | 13067.35 | 53.57 | 984.92 | 91.51 | 5307.58 | 40.92 | 28.60 | 56.97 | 10558.00 | 66.68 | 309.65 |
| University of Pittsburgh | 94 | 14804.68 | 54.79 | 780.83 | 86.59 | 4340.83 | 39.22 | 34.00 | 60.48 | 12100.00 | 68.12 | 309.19 |
| Uppsala University | 95 | 14215.73 | 54.37 | 884.08 | 89.08 | 4693.67 | 39.84 | 31.00 | 58.53 | 11060.00 | 67.15 | 308.97 |
| University of Southampton | 96 | 13711.03 | 54.02 | 874.92 | 88.86 | 5187.50 | 40.71 | 31.20 | 58.66 | 10598.00 | 66.72 | 308.96 |
| University of Melbourne | 97 | 12991.73 | 53.51 | 815.58 | 87.42 | 4539.92 | 39.57 | 33.60 | 60.22 | 11542.00 | 67.60 | 308.32 |
| University of Copenhagen | 98 | 12925.99 | 53.47 | 908.00 | 89.65 | 3821.17 | 38.30 | 32.60 | 59.57 | 11203.00 | 67.28 | 308.27 |
| University of Alberta | 99 | 13465.28 | 53.85 | 930.33 | 90.19 | 5222.25 | 40.77 | 28.20 | 56.71 | 10472.00 | 66.60 | 308.12 |
| Université Joseph Fourier Grenoble 1 | 100 | 13348.69 | 53.76 | 846.33 | 88.17 | 4303.41 | 39.15 | 32.60 | 59.57 | 10501.00 | 66.63 | 307.28 |

Table B.6: Social Sciences ($SOC$)

| **University** | **Rank** | **JIT**[1] | **Score**[1] | **Total Article Count**[2] | **Score**[2] | **Total Document Count**[3] | **Score**[3] | **H-Index**[4] | **Score**[4] | **Total Citation Count**[5] | **Score**[5] | **TOTAL SCORE** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Harvard University | 1 | 11524.75 | 90.00 | 1259.25 | 140.00 | 7627.84 | 65.00 | 29.60 | 90.00 | 13891.00 | 115.00 | 500.00 |
| University of Michigan Ann Arbor | 2 | 6436.48 | 69.99 | 832.92 | 115.87 | 5030.16 | 53.71 | 23.60 | 79.69 | 7829.00 | 89.77 | 409.04 |
| Columbia University New York | 3 | 5571.35 | 66.59 | 731.17 | 110.11 | 4977.50 | 53.48 | 21.60 | 76.26 | 6480.00 | 84.15 | 390.60 |
| University of North Carolina Chapel Hill | 4 | 5747.60 | 67.29 | 722.50 | 109.62 | 4449.08 | 51.19 | 20.80 | 74.89 | 6643.00 | 84.83 | 387.81 |
| University of Toronto | 5 | 4758.87 | 63.40 | 836.25 | 116.06 | 5084.08 | 53.95 | 19.00 | 71.79 | 5611.00 | 80.53 | 385.73 |
| University of Washington Seattle | 6 | 5157.15 | 64.96 | 653.83 | 105.73 | 4056.42 | 49.48 | 22.40 | 77.63 | 6309.00 | 83.44 | 381.25 |
| University of California Los Angeles | 7 | 5252.67 | 65.34 | 756.00 | 111.52 | 4614.75 | 51.91 | 19.20 | 72.14 | 5517.00 | 80.14 | 381.04 |
| University of Pennsylvania | 8 | 4868.00 | 63.83 | 679.50 | 107.19 | 4232.75 | 50.25 | 20.80 | 74.89 | 5684.00 | 80.84 | 376.98 |
| University of California Berkeley | 9 | 4537.16 | 62.53 | 735.33 | 110.35 | 4532.92 | 51.55 | 20.00 | 73.51 | 5152.00 | 78.62 | 376.56 |
| Johns Hopkins University | 10 | 5285.08 | 65.47 | 550.92 | 99.91 | 3539.50 | 47.23 | 20.80 | 74.89 | 5303.00 | 79.25 | 366.75 |
| University of Minnesota | 11 | 4569.03 | 62.65 | 583.92 | 101.78 | 3734.00 | 48.08 | 19.80 | 73.17 | 5028.00 | 78.11 | 363.78 |
| Stanford University | 12 | 3949.62 | 60.22 | 654.92 | 105.79 | 3731.67 | 48.07 | 19.60 | 72.82 | 4719.00 | 76.82 | 363.72 |
| Yale University | 13 | 3880.85 | 59.95 | 650.67 | 105.55 | 4056.50 | 49.48 | 19.20 | 72.14 | 4103.00 | 74.26 | 361.37 |
| New York University | 14 | 3734.96 | 59.37 | 689.50 | 107.75 | 4342.25 | 50.72 | 17.20 | 68.70 | 4106.00 | 74.27 | 360.82 |
| University of Oxford | 15 | 3185.12 | 57.21 | 701.50 | 108.43 | 4215.00 | 50.17 | 17.40 | 69.05 | 3745.00 | 72.76 | 357.62 |
| University of Chicago | 16 | 3441.80 | 58.22 | 542.67 | 99.44 | 4042.33 | 49.42 | 19.80 | 73.17 | 3873.00 | 73.30 | 353.55 |
| University of Wisconsin Madison | 17 | 3081.12 | 56.80 | 551.33 | 99.93 | 3644.17 | 47.69 | 17.80 | 69.73 | 4049.00 | 74.03 | 348.19 |
| Northwestern University | 18 | 3456.55 | 58.28 | 545.17 | 99.58 | 3265.25 | 46.04 | 18.00 | 70.08 | 4000.00 | 73.83 | 347.81 |
| Pennsylvania State University | 19 | 3304.87 | 57.68 | 606.25 | 103.04 | 3791.17 | 48.33 | 15.60 | 65.95 | 3676.00 | 72.48 | 347.48 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of British Columbia | 20 | 3396.06 | 58.04 | 549.83 | 99.85 | 3586.16 | 47.44 | 17.20 | 68.70 | 3687.00 | 72.52 | 346.55 |
| Duke University | 21 | 3671.61 | 59.12 | 497.00 | 96.86 | 3175.83 | 45.65 | 17.80 | 69.73 | 3995.00 | 73.81 | 345.17 |
| University College London | 22 | 3158.43 | 57.11 | 527.42 | 98.58 | 3761.50 | 48.20 | 16.80 | 68.02 | 3279.00 | 70.82 | 342.72 |
| University of Texas Austin | 23 | 2814.22 | 55.75 | 587.17 | 101.96 | 3573.91 | 47.38 | 16.00 | 66.64 | 3100.00 | 70.08 | 341.82 |
| University of Sydney | 24 | 2697.62 | 55.30 | 613.42 | 103.45 | 3679.50 | 47.84 | 15.00 | 64.92 | 3074.00 | 69.97 | 341.48 |
| Ohio State University | 25 | 3164.88 | 57.13 | 520.75 | 98.20 | 3389.16 | 46.58 | 16.00 | 66.64 | 3526.00 | 71.85 | 340.41 |
| University of Southern California | 26 | 3250.84 | 57.47 | 478.25 | 95.80 | 3001.17 | 44.89 | 18.00 | 70.08 | 3592.00 | 72.13 | 340.36 |
| University of Pittsburgh | 27 | 3247.63 | 57.46 | 413.92 | 92.15 | 2978.92 | 44.80 | 18.20 | 70.42 | 3868.00 | 73.28 | 338.11 |
| University of Cambridge | 28 | 2324.71 | 53.83 | 560.58 | 100.46 | 3732.00 | 48.07 | 16.20 | 66.98 | 2766.00 | 68.69 | 338.03 |
| University of Melbourne | 29 | 2769.75 | 55.58 | 544.25 | 99.53 | 3192.83 | 45.73 | 15.80 | 66.30 | 3079.00 | 69.99 | 337.13 |
| University of Queensland | 30 | 2692.48 | 55.27 | 546.50 | 99.66 | 2990.41 | 44.85 | 16.00 | 66.64 | 3153.00 | 70.30 | 336.72 |
| University of Maryland | 31 | 3052.12 | 56.69 | 459.25 | 94.72 | 3152.58 | 45.55 | 16.40 | 67.33 | 3420.00 | 71.41 | 335.70 |
| Cornell University | 32 | 2670.05 | 55.19 | 481.58 | 95.98 | 3255.25 | 46.00 | 16.20 | 66.98 | 3226.00 | 70.60 | 334.76 |
| Michigan State University | 33 | 2755.43 | 55.52 | 463.42 | 94.96 | 2982.42 | 44.81 | 15.40 | 65.61 | 3015.00 | 69.73 | 330.63 |
| University of Manchester | 34 | 2346.68 | 53.92 | 483.67 | 96.10 | 3729.00 | 48.06 | 14.20 | 63.55 | 2753.00 | 68.64 | 330.26 |
| University of California San Francisco | 35 | 3548.25 | 58.64 | 371.50 | 89.75 | 1764.50 | 39.52 | 17.80 | 69.73 | 3595.00 | 72.14 | 329.79 |
| Boston University | 36 | 2896.21 | 56.08 | 401.42 | 91.45 | 2787.17 | 43.96 | 16.60 | 67.67 | 3165.00 | 70.35 | 329.51 |
| University of Amsterdam | 37 | 2568.48 | 54.79 | 522.00 | 98.27 | 2805.83 | 44.05 | 14.00 | 63.21 | 2705.00 | 68.44 | 328.75 |
| Erasmus University | 38 | 2805.10 | 55.72 | 471.08 | 95.39 | 2010.75 | 40.59 | 16.00 | 66.64 | 3047.00 | 69.86 | 328.20 |
| Emory University | 39 | 3181.48 | 57.20 | 371.17 | 89.73 | 2434.33 | 42.43 | 16.40 | 67.33 | 3184.00 | 70.43 | 327.12 |
| Indiana University | 40 | 2235.17 | 53.48 | 492.67 | 96.61 | 3410.00 | 46.67 | 14.00 | 63.21 | 2357.00 | 66.99 | 326.95 |
| University of Nottingham | 41 | 2065.47 | 52.81 | 480.50 | 95.92 | 3240.75 | 45.94 | 14.60 | 64.24 | 2381.00 | 67.09 | 325.99 |
| Arizona State University | 42 | 2345.09 | 53.91 | 431.83 | 93.17 | 3007.08 | 44.92 | 14.40 | 63.89 | 2534.00 | 67.72 | 323.61 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of California Davis | 43 | 2355.61 | 53.95 | 357.67 | 88.97 | 2372.17 | 42.16 | 16.80 | 68.02 | 2973.00 | 69.55 | 322.65 |
| McGill University | 44 | 2512.97 | 54.57 | 408.33 | 91.84 | 2497.41 | 42.71 | 15.00 | 64.92 | 2475.00 | 67.48 | 321.51 |
| University of Florida | 45 | 2388.00 | 54.08 | 400.58 | 91.40 | 2628.67 | 43.28 | 14.20 | 63.55 | 2562.00 | 67.84 | 320.14 |
| Utrecht University | 46 | 2287.33 | 53.68 | 409.25 | 91.89 | 2175.83 | 41.31 | 15.00 | 64.92 | 2657.00 | 68.24 | 320.04 |
| London School of Economics and Political Science | 47 | 1990.27 | 52.51 | 437.50 | 93.49 | 2994.33 | 44.86 | 13.80 | 62.86 | 2126.00 | 66.03 | 319.76 |
| VU University of Amsterdam | 48 | 2338.98 | 53.88 | 407.00 | 91.76 | 1878.00 | 40.01 | 14.80 | 64.58 | 2892.00 | 69.21 | 319.46 |
| Karolinska Institute | 49 | 2936.63 | 56.23 | 299.67 | 85.69 | 1496.25 | 38.35 | 17.40 | 69.05 | 3035.00 | 69.81 | 319.13 |
| Monash University | 50 | 1774.16 | 51.66 | 526.92 | 98.55 | 2687.66 | 43.53 | 12.20 | 60.11 | 1885.00 | 65.02 | 318.88 |
| University of Illinois Chicago | 51 | 2189.69 | 53.30 | 383.42 | 90.43 | 2620.17 | 43.24 | 14.80 | 64.58 | 2428.00 | 67.28 | 318.83 |
| Texas A&M University | 52 | 2141.43 | 53.11 | 387.25 | 90.64 | 2425.25 | 42.39 | 14.80 | 64.58 | 2425.00 | 67.27 | 318.00 |
| Rutgers University | 53 | 1917.16 | 52.23 | 407.08 | 91.77 | 3116.00 | 45.39 | 13.20 | 61.83 | 2037.00 | 65.65 | 316.87 |
| University of California San Diego | 54 | 2319.94 | 53.81 | 313.17 | 86.45 | 2087.25 | 40.92 | 16.20 | 66.98 | 2731.00 | 68.54 | 316.71 |
| Princeton University | 55 | 1533.56 | 50.72 | 347.17 | 88.38 | 2808.00 | 44.06 | 16.20 | 66.98 | 2185.00 | 66.27 | 316.41 |
| Vanderbilt University | 56 | 2081.16 | 52.87 | 352.92 | 88.70 | 2197.00 | 41.40 | 15.80 | 66.30 | 2269.00 | 66.62 | 315.89 |
| University of Copenhagen | 57 | 2193.18 | 53.31 | 371.08 | 89.73 | 1821.91 | 39.77 | 15.20 | 65.27 | 2436.00 | 67.32 | 315.39 |
| Massachusetts Institute of Technology | 58 | 2137.14 | 53.09 | 297.42 | 85.56 | 1996.67 | 40.53 | 15.80 | 66.30 | 2848.00 | 69.03 | 314.51 |
| University of Arizona | 59 | 2049.48 | 52.75 | 354.50 | 88.79 | 2441.67 | 42.46 | 14.20 | 63.55 | 2336.00 | 66.90 | 314.45 |
| University of Iowa | 60 | 2031.26 | 52.68 | 345.33 | 88.27 | 2261.59 | 41.68 | 14.80 | 64.58 | 2218.00 | 66.41 | 313.62 |
| University of Alberta | 61 | 2352.09 | 53.94 | 374.50 | 89.92 | 2447.42 | 42.49 | 12.20 | 60.11 | 2076.00 | 65.82 | 312.28 |
| University of Georgia | 62 | 1949.47 | 52.35 | 381.58 | 90.32 | 2370.91 | 42.16 | 13.00 | 61.49 | 2045.00 | 65.69 | 312.01 |
| Washington University Saint Louis | 63 | 2138.49 | 53.10 | 341.33 | 88.05 | 2006.59 | 40.57 | 14.20 | 63.55 | 2294.00 | 66.72 | 311.99 |
| University of California Irvine | 64 | 1890.62 | 52.12 | 318.83 | 86.77 | 2247.58 | 41.62 | 15.00 | 64.92 | 2248.00 | 66.53 | 311.97 |
| Florida State University | 65 | 1724.04 | 51.47 | 383.00 | 90.40 | 2340.83 | 42.02 | 13.00 | 61.49 | 2087.00 | 65.86 | 311.25 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Bristol | 66 | 1862.31 | 52.01 | 294.00 | 85.37 | 2462.67 | 42.55 | 15.00 | 64.92 | 2113.00 | 65.97 | 310.83 |
| University of Edinburgh | 67 | 1610.72 | 51.02 | 334.50 | 87.66 | 3298.67 | 46.19 | 12.60 | 60.80 | 1900.00 | 65.08 | 310.75 |
| University of New South Wales | 68 | 1764.84 | 51.63 | 397.00 | 91.20 | 2167.66 | 41.27 | 13.00 | 61.49 | 1865.00 | 64.94 | 310.52 |
| University of Virginia | 69 | 1809.51 | 51.80 | 341.08 | 88.03 | 2714.42 | 43.65 | 13.40 | 62.18 | 1820.00 | 64.75 | 310.41 |
| Australian National University | 70 | 1481.31 | 50.51 | 432.00 | 93.18 | 2642.58 | 43.34 | 11.80 | 59.43 | 1559.00 | 63.67 | 310.12 |
| University of Oslo | 71 | 1907.55 | 52.19 | 368.33 | 89.57 | 1770.00 | 39.54 | 13.20 | 61.83 | 1919.00 | 65.16 | 308.30 |
| University of Illinois Urbana Champaign | 72 | 1714.07 | 51.43 | 343.83 | 88.19 | 2664.75 | 43.43 | 12.00 | 59.77 | 1875.00 | 64.98 | 307.80 |
| University of Leeds | 73 | 1469.84 | 50.47 | 357.00 | 88.93 | 2662.08 | 43.42 | 12.20 | 60.11 | 1759.00 | 64.50 | 307.43 |
| Ghent University | 74 | 1440.40 | 50.35 | 409.58 | 91.91 | 1667.66 | 39.10 | 12.80 | 61.15 | 1819.00 | 64.75 | 307.25 |
| University of Birmingham | 75 | 1659.20 | 51.21 | 326.67 | 87.22 | 2935.34 | 44.61 | 11.80 | 59.43 | 1722.00 | 64.34 | 306.81 |
| University of Groningen | 76 | 1732.91 | 51.50 | 361.50 | 89.19 | 1848.58 | 39.89 | 12.60 | 60.80 | 1873.00 | 64.97 | 306.35 |
| National University of Singapore | 77 | 1879.23 | 52.08 | 343.25 | 88.15 | 2040.91 | 40.72 | 12.40 | 60.46 | 1795.00 | 64.65 | 306.06 |
| University of South Carolina | 78 | 1879.29 | 52.08 | 283.25 | 84.76 | 1891.91 | 40.07 | 13.80 | 62.86 | 2119.00 | 66.00 | 305.77 |
| University of Maastricht | 79 | 2041.60 | 52.72 | 325.67 | 87.16 | 1506.50 | 38.40 | 13.00 | 61.49 | 2069.00 | 65.79 | 305.55 |
| McMaster University | 80 | 1893.38 | 52.13 | 265.33 | 83.74 | 1701.25 | 39.25 | 14.60 | 64.24 | 2130.00 | 66.04 | 305.40 |
| King's College London | 81 | 1507.66 | 50.62 | 319.08 | 86.79 | 2780.58 | 43.94 | 12.00 | 59.77 | 1601.00 | 63.84 | 304.95 |
| Imperial College | 82 | 1869.97 | 52.04 | 216.25 | 80.97 | 1148.84 | 36.85 | 16.80 | 68.02 | 2343.00 | 66.93 | 304.80 |
| Purdue University | 83 | 1615.72 | 51.04 | 331.33 | 87.48 | 2055.09 | 40.78 | 12.40 | 60.46 | 1818.00 | 64.74 | 304.51 |
| University of Hong Kong | 84 | 1594.68 | 50.96 | 344.58 | 88.23 | 1585.33 | 38.74 | 13.20 | 61.83 | 1749.00 | 64.46 | 304.22 |
| Brown University | 85 | 1682.47 | 51.30 | 264.75 | 83.71 | 1939.16 | 40.28 | 14.20 | 63.55 | 1766.00 | 64.53 | 303.37 |
| George Washington University | 86 | 1717.48 | 51.44 | 325.33 | 87.14 | 2002.58 | 40.56 | 11.80 | 59.43 | 1549.00 | 63.62 | 302.19 |
| Catholic University of Leuven | 87 | 1404.07 | 50.21 | 341.33 | 88.05 | 1635.00 | 38.96 | 12.60 | 60.80 | 1657.00 | 64.07 | 302.09 |
| University of Western Ontario | 88 | 1506.29 | 50.61 | 304.42 | 85.96 | 1923.92 | 40.21 | 12.40 | 60.46 | 1764.00 | 64.52 | 301.76 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University of Miami | 89 | 1718.63 | 51.45 | 288.67 | 85.07 | 2054.75 | 40.78 | 12.00 | 59.77 | 1728.00 | 64.37 | 301.43 |
| Georgetown University | 90 | 1723.94 | 51.47 | 268.75 | 83.94 | 2413.50 | 42.34 | 12.40 | 60.46 | 1417.00 | 63.07 | 301.28 |
| University of Warwick | 91 | 1352.93 | 50.01 | 310.50 | 86.30 | 2495.17 | 42.70 | 11.40 | 58.74 | 1518.00 | 63.49 | 301.24 |
| University of Sheffield | 92 | 1412.73 | 50.24 | 294.25 | 85.38 | 2266.25 | 41.70 | 11.80 | 59.43 | 1547.00 | 63.62 | 300.37 |
| Université de Montreal | 93 | 1684.42 | 51.31 | 304.33 | 85.95 | 1867.84 | 39.97 | 11.60 | 59.08 | 1533.00 | 63.56 | 299.87 |
| University of Connecticut Storrs | 94 | 1550.42 | 50.78 | 284.67 | 84.84 | 1748.08 | 39.45 | 12.40 | 60.46 | 1675.00 | 64.15 | 299.68 |
| University of Colorado Boulder | 95 | 1356.44 | 50.02 | 275.17 | 84.30 | 2111.33 | 41.03 | 12.00 | 59.77 | 1538.00 | 63.58 | 298.70 |
| Aarhus University | 96 | 1481.11 | 50.51 | 287.75 | 85.01 | 1287.50 | 37.45 | 13.20 | 61.83 | 1527.00 | 63.53 | 298.34 |
| York University | 97 | 1308.06 | 49.83 | 292.50 | 85.28 | 2122.75 | 41.08 | 11.60 | 59.08 | 1337.00 | 62.74 | 298.02 |
| University of Utah | 98 | 1460.61 | 50.43 | 220.08 | 81.18 | 1508.00 | 38.41 | 14.20 | 63.55 | 1708.00 | 64.29 | 297.86 |
| University of Helsinki | 99 | 1544.34 | 50.76 | 272.58 | 84.15 | 1606.58 | 38.83 | 12.40 | 60.46 | 1472.00 | 63.30 | 297.51 |
| Université d'Ottawa University of Ottawa | 100 | 1503.18 | 50.60 | 269.67 | 83.99 | 1899.58 | 40.11 | 11.60 | 59.08 | 1512.00 | 63.47 | 297.25 |

# APPENDIX C

## Field Based Ranking of Turkish Universities

Table C.1: Agriculture & Env. Sciences (*AGE*)

| No | University | Score | Rank |
|---|---|---|---|
| 1 | ANKARA ÜNİVERSİTESİ | 289.92 | 199 |
| 2 | EGE ÜNİVERSİTESİ | 284.64 | 245 |
| 3 | ERCİYES ÜNİVERSİTESİ | 283.17 | 257 |
| 4 | ATATÜRK ÜNİVERSİTESİ | 282.82 | 262 |
| 5 | SELÇUK ÜNİVERSİTESİ | 279.50 | 304 |
| 6 | İSTANBUL ÜNİVERSİTESİ | 275.89 | 346 |
| 7 | ÇUKUROVA ÜNİVERSİTESİ | 274.53 | 363 |
| 8 | HACETTEPE ÜNİVERSİTESİ | 269.75 | 441 |
| 9 | ORTA DOĞU TEKNİK ÜNİVERSİTESİ | 269.40 | 448 |
| 10 | ONDOKUZ MAYIS ÜNİVERSİTESİ | 267.99 | 473 |
| 11 | SÜLEYMAN DEMİREL ÜNİVERSİTESİ | 267.83 | 477 |
| 12 | İSTANBUL TEKNİK ÜNİVERSİTESİ | 267.80 | 478 |
| 13 | ULUDAĞ ÜNİVERSİTESİ | 267.48 | 486 |
| 14 | GAZİOSMAN PAŞA ÜNİVERSİTESİ | 265.73 | 519 |
| 15 | GAZİ ÜNİVERSİTESİ | 265.39 | 525 |
| 16 | KARADENİZ TEKNİK ÜNİVERSİTESİ | 264.72 | 534 |
| 17 | AKDENİZ ÜNİVERSİTESİ | 264.52 | 536 |
| 18 | FIRAT ÜNİVERSİTESİ | 263.17 | 570 |
| 19 | MUSTAFA KEMAL ÜNİVERSİTESİ | 262.81 | 578 |
| 20 | DOKUZ EYLÜL ÜNİVERSİTESİ | 262.38 | 586 |
| 21 | ADNAN MENDERES ÜNİVERSİTESİ | 260.37 | 637 |
| 22 | YÜZÜNCÜ YIL ÜNİVERSİTESİ | 260.29 | 639 |
| 23 | ANADOLU ÜNİVERSİTESİ | 259.83 | 648 |
| 24 | HARRAN ÜNİVERSİTESİ | 257.81 | 695 |
| 25 | ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ | 257.17 | 717 |

| 26 | YILDIZ TEKNİK ÜNİVERSİTESİ | 256.83 | 728 |
|---|---|---|---|
| 27 | ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ | 256.00 | 753 |
| 28 | PAMUKKALE ÜNİVERSİTESİ | 254.67 | 794 |
| 29 | MERSİN ÜNİVERSİTESİ | 254.64 | 796 |
| 30 | İNÖNÜ ÜNİVERSİTESİ | 253.32 | 837 |
| 31 | DİCLE ÜNİVERSİTESİ | 252.73 | 846 |
| 32 | MUĞLA ÜNİVERSİTESİ | 247.96 | 910 |
| 33 | KAFKAS ÜNİVERSİTESİ | 244.70 | 934 |
| 34 | AFYON KOCATEPE ÜNİVERSİTESİ | 244.18 | 940 |
| 35 | BALIKESİR ÜNİVERSİTESİ | 234.07 | 977 |
| 36 | GAZİANTEP ÜNİVERSİTESİ | 232.69 | 987 |
| 37 | BOĞAZİÇİ ÜNİVERSİTESİ | 222.96 | 1028 |
| 38 | CUMHURİYET ÜNİVERSİTESİ | 222.27 | 1032 |
| 39 | MARMARA ÜNİVERSİTESİ | 221.26 | 1036 |
| 40 | CELAL BAYAR ÜNİVERSİTESİ | 220.81 | 1037 |
| 41 | GEBZE YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 218.96 | 1042 |
| 42 | KIRIKKALE ÜNİVERSİTESİ | 216.99 | 1049 |
| 43 | NİĞDE ÜNİVERSİTESİ | 214.72 | 1058 |
| 44 | TRAKYA ÜNİVERSİTESİ | 212.06 | 1062 |
| 45 | ABANT İZZET BAYSAL ÜNİVERSİTESİ | 209.36 | 1075 |
| 46 | SAKARYA ÜNİVERSİTESİ | 205.52 | 1092 |
| 47 | KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ | 204.08 | 1098 |
| 48 | İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 203.09 | 1104 |
| 49 | KOCAELİ ÜNİVERSİTESİ | 196.28 | 1119 |
| 50 | NAMIK KEMAL ÜNİVERSİTESİ | 173.79 | 1195 |
| 51 | ZONGULDAK KARAELMAS ÜNİVERSİTESİ | 161.10 | 1223 |
| 52 | AKSARAY ÜNİVERSİTESİ | 152.94 | 1250 |
| 53 | YEDİTEPE ÜNİVERSİTESİ | 151.58 | 1252 |
| 54 | RİZE ÜNİVERSİTESİ | 151.19 | 1254 |
| 55 | SABANCI ÜNİVERSİTESİ | 140.55 | 1288 |
| 56 | MEHMET AKİF ERSOY ÜNİVERSİTESİ | 139.88 | 1294 |
| 57 | GİRESUN ÜNİVERSİTESİ | 139.63 | 1295 |
| 58 | DÜZCE ÜNİVERSİTESİ | 127.91 | 1345 |
| 59 | BOZOK ÜNİVERSİTESİ | 116.24 | 1392 |
| 60 | ADIYAMAN ÜNİVERSİTESİ | 115.14 | 1400 |
| 61 | AHİ EVRAN ÜNİVERSİTESİ | 112.31 | 1405 |
| 62 | DUMLUPINAR ÜNİVERSİTESİ | 97.64 | 1485 |
| 63 | BİNGÖL ÜNİVERSİTESİ | 94.30 | 1504 |

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|---|---|---|---|
| 64 | SİNOP ÜNİVERSİTESİ | 93.55 | 1510 |
| 65 | FATİH ÜNİVERSİTESİ | 92.21 | 1523 |
| 66 | BAŞKENT ÜNİVERSİTESİ | 68.23 | 1627 |
| 67 | GÜLHANE ASKERİ TIP AKADEMİSİ | 63.42 | 1655 |
| 68 | ERZİNCAN ÜNİVERSİTESİ | 58.58 | 1685 |
| 69 | ÇANKIRI KARATEKİN ÜNİVERSİTESİ | 54.13 | 1709 |
| 70 | BİLKENT ÜNİVERSİTESİ | 35.04 | 1818 |
| 71 | BAHÇEŞEHİR ÜNİVERSİTESİ | 31.20 | 1841 |
| 72 | ÇANKAYA ÜNİVERSİTESİ | 15.73 | 1924 |
| 73 | ATILIM ÜNİVERSİTESİ | 14.75 | 1932 |
| 74 | KARABÜK ÜNİVERSİTESİ | 13.79 | 1935 |
| 75 | KOÇ ÜNİVERSİTESİ | 11.91 | 1947 |
| 76 | İSTANBUL BİLİM ÜNİVERSİTESİ | 6.97 | 1967 |
| 77 | TOBB EKONOMİ VE TEKNOLOJİ ÜNİVERSİTESİ | 6.82 | 1969 |
| 78 | İZMİR EKONOMİ ÜNİVERSİTESİ | 4.88 | 1975 |
| 79 | DOĞUŞ ÜNİVERSİTESİ | 2.84 | 1985 |
| 80 | UFUK ÜNİVERSİTESİ | 0.00 | 1999 |

Table C.2: Clinical Medicine ($MED$)

| No | University | Score | Rank |
|---|---|---|---|
| 1 | İSTANBUL ÜNİVERSİTESİ | 278.97 | 169 |
| 2 | HACETTEPE ÜNİVERSİTESİ | 274.14 | 215 |
| 3 | ANKARA ÜNİVERSİTESİ | 266.09 | 294 |
| 4 | EGE ÜNİVERSİTESİ | 264.39 | 325 |
| 5 | GAZİ ÜNİVERSİTESİ | 263.80 | 342 |
| 6 | BAŞKENT ÜNİVERSİTESİ | 262.86 | 362 |
| 7 | GÜLHANE ASKERİ TIP AKADEMİSİ | 260.99 | 400 |
| 8 | MARMARA ÜNİVERSİTESİ | 260.22 | 426 |
| 9 | DOKUZ EYLÜL ÜNİVERSİTESİ | 259.03 | 460 |
| 10 | ERCİYES ÜNİVERSİTESİ | 257.70 | 508 |
| 11 | SELÇUK ÜNİVERSİTESİ | 256.87 | 535 |
| 12 | AKDENİZ ÜNİVERSİTESİ | 256.77 | 540 |
| 13 | ULUDAĞ ÜNİVERSİTESİ | 256.59 | 550 |
| 14 | ONDOKUZ MAYIS ÜNİVERSİTESİ | 256.07 | 574 |
| 15 | ATATÜRK ÜNİVERSİTESİ | 255.89 | 581 |
| 16 | ÇUKUROVA ÜNİVERSİTESİ | 255.06 | 626 |
| 17 | KOCAELİ ÜNİVERSİTESİ | 254.85 | 637 |
| 18 | YEDİTEPE ÜNİVERSİTESİ | 254.78 | 644 |
| 19 | KARADENİZ TEKNİK ÜNİVERSİTESİ | 254.66 | 648 |
| 20 | GAZİANTEP ÜNİVERSİTESİ | 254.58 | 654 |
| 21 | İNÖNÜ ÜNİVERSİTESİ | 254.12 | 675 |
| 22 | DİCLE ÜNİVERSİTESİ | 254.05 | 678 |
| 23 | TRAKYA ÜNİVERSİTESİ | 253.98 | 679 |
| 24 | SÜLEYMAN DEMİREL ÜNİVERSİTESİ | 253.58 | 698 |
| 25 | PAMUKKALE ÜNİVERSİTESİ | 253.04 | 739 |
| 26 | FIRAT ÜNİVERSİTESİ | 253.00 | 743 |
| 27 | CELAL BAYAR ÜNİVERSİTESİ | 252.82 | 753 |
| 28 | HARRAN ÜNİVERSİTESİ | 252.71 | 761 |
| 29 | ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ | 252.52 | 777 |
| 30 | CUMHURİYET ÜNİVERSİTESİ | 252.36 | 790 |
| 31 | MERSİN ÜNİVERSİTESİ | 252.34 | 792 |
| 32 | YÜZÜNCÜ YIL ÜNİVERSİTESİ | 252.08 | 807 |
| 33 | KIRIKKALE ÜNİVERSİTESİ | 252.07 | 809 |
| 34 | AFYON KOCATEPE ÜNİVERSİTESİ | 251.89 | 819 |
| 35 | ADNAN MENDERES ÜNİVERSİTESİ | 251.87 | 820 |
| 36 | FATİH ÜNİVERSİTESİ | 251.49 | 838 |

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|---|---|---|---|
| 37 | ZONGULDAK KARAELMAS ÜNİVERSİTESİ | 251.40 | 841 |
| 38 | ABANT İZZET BAYSAL ÜNİVERSİTESİ | 250.95 | 863 |
| 39 | GAZİOSMAN PAŞA ÜNİVERSİTESİ | 250.88 | 871 |
| 40 | MUSTAFA KEMAL ÜNİVERSİTESİ | 247.40 | 922 |
| 41 | DÜZCE ÜNİVERSİTESİ | 235.23 | 978 |
| 42 | ORTA DOĞU TEKNİK ÜNİVERSİTESİ | 228.07 | 1001 |
| 43 | UFUK ÜNİVERSİTESİ | 213.52 | 1048 |
| 44 | BOĞAZİÇİ ÜNİVERSİTESİ | 205.14 | 1063 |
| 45 | İSTANBUL BİLİM ÜNİVERSİTESİ | 201.59 | 1072 |
| 46 | KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ | 197.56 | 1083 |
| 47 | BİLKENT ÜNİVERSİTESİ | 171.62 | 1137 |
| 48 | DUMLUPINAR ÜNİVERSİTESİ | 160.26 | 1160 |
| 49 | ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ | 126.17 | 1248 |
| 50 | YILDIZ TEKNİK ÜNİVERSİTESİ | 117.95 | 1274 |
| 51 | KAFKAS ÜNİVERSİTESİ | 105.27 | 1326 |
| 52 | NAMIK KEMAL ÜNİVERSİTESİ | 96.25 | 1358 |
| 53 | İSTANBUL TEKNİK ÜNİVERSİTESİ | 86.43 | 1389 |
| 54 | KOÇ ÜNİVERSİTESİ | 75.92 | 1436 |
| 55 | SAKARYA ÜNİVERSİTESİ | 73.29 | 1451 |
| 56 | MUĞLA ÜNİVERSİTESİ | 70.49 | 1469 |
| 57 | SABANCI ÜNİVERSİTESİ | 69.46 | 1473 |
| 58 | ANADOLU ÜNİVERSİTESİ | 67.92 | 1482 |
| 59 | BALIKESİR ÜNİVERSİTESİ | 67.43 | 1485 |
| 60 | RİZE ÜNİVERSİTESİ | 63.49 | 1506 |
| 61 | İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 51.92 | 1561 |
| 62 | TOBB EKONOMİ VE TEKNOLOJİ ÜNİVERSİTESİ | 36.99 | 1665 |
| 63 | ADIYAMAN ÜNİVERSİTESİ | 33.86 | 1693 |
| 64 | BOZOK ÜNİVERSİTESİ | 32.93 | 1704 |
| 65 | NİĞDE ÜNİVERSİTESİ | 24.10 | 1778 |
| 66 | MEHMET AKİF ERSOY ÜNİVERSİTESİ | 23.76 | 1781 |
| 67 | AHİ EVRAN ÜNİVERSİTESİ | 19.65 | 1809 |
| 68 | GİRESUN ÜNİVERSİTESİ | 19.06 | 1817 |
| 69 | ATILIM ÜNİVERSİTESİ | 18.58 | 1823 |
| 70 | DOĞUŞ ÜNİVERSİTESİ | 16.86 | 1841 |
| 71 | BAHÇEŞEHİR ÜNİVERSİTESİ | 13.29 | 1867 |
| 72 | ERZİNCAN ÜNİVERSİTESİ | 11.66 | 1885 |
| 73 | ÇANKIRI KARATEKİN ÜNİVERSİTESİ | 10.89 | 1898 |
| 74 | İZMİR EKONOMİ ÜNİVERSİTESİ | 9.14 | 1911 |

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|---|---|---|---|
| 75 | GEBZE YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 8.63 | 1919 |
| 76 | AKSARAY ÜNİVERSİTESİ | 5.08 | 1954 |
| 77 | SİNOP ÜNİVERSİTESİ | 4.61 | 1956 |
| 78 | ÇANKAYA ÜNİVERSİTESİ | 4.00 | 1960 |
| 79 | BİNGÖL ÜNİVERSİTESİ | 2.79 | 1974 |
| 80 | KARABÜK ÜNİVERSİTESİ | 2.15 | 1978 |

Table C.3: Engineering, Computing Technology (*ENG*)

| No | University | Score | Rank |
|---|---|---|---|
| 1 | ORTA DOĞU TEKNİK ÜNİVERSİTESİ | 290.38 | 190 |
| 2 | İSTANBUL TEKNİK ÜNİVERSİTESİ | 288.55 | 202 |
| 3 | GAZİ ÜNİVERSİTESİ | 276.20 | 301 |
| 4 | EGE ÜNİVERSİTESİ | 269.70 | 400 |
| 5 | ERCİYES ÜNİVERSİTESİ | 268.98 | 415 |
| 6 | YILDIZ TEKNİK ÜNİVERSİTESİ | 268.04 | 428 |
| 7 | SELÇUK ÜNİVERSİTESİ | 267.86 | 434 |
| 8 | FIRAT ÜNİVERSİTESİ | 267.24 | 448 |
| 9 | DOKUZ EYLÜL ÜNİVERSİTESİ | 265.81 | 481 |
| 10 | ATATÜRK ÜNİVERSİTESİ | 265.10 | 495 |
| 11 | HACETTEPE ÜNİVERSİTESİ | 263.62 | 528 |
| 12 | BOĞAZİÇİ ÜNİVERSİTESİ | 262.84 | 546 |
| 13 | KARADENİZ TEKNİK ÜNİVERSİTESİ | 262.50 | 552 |
| 14 | ANADOLU ÜNİVERSİTESİ | 261.61 | 570 |
| 15 | KOCAELİ ÜNİVERSİTESİ | 260.92 | 591 |
| 16 | BİLKENT ÜNİVERSİTESİ | 260.61 | 602 |
| 17 | ÇUKUROVA ÜNİVERSİTESİ | 258.83 | 637 |
| 18 | GEBZE YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 258.78 | 638 |
| 19 | ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ | 257.75 | 672 |
| 20 | SÜLEYMAN DEMİREL ÜNİVERSİTESİ | 257.27 | 686 |
| 21 | İSTANBUL ÜNİVERSİTESİ | 257.25 | 687 |
| 22 | ANKARA ÜNİVERSİTESİ | 257.07 | 695 |
| 23 | SAKARYA ÜNİVERSİTESİ | 256.35 | 719 |
| 24 | PAMUKKALE ÜNİVERSİTESİ | 254.76 | 771 |
| 25 | MARMARA ÜNİVERSİTESİ | 254.37 | 782 |
| 26 | SABANCI ÜNİVERSİTESİ | 253.04 | 819 |
| 27 | KOÇ ÜNİVERSİTESİ | 252.03 | 839 |
| 28 | GAZİANTEP ÜNİVERSİTESİ | 250.55 | 857 |
| 29 | İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 250.03 | 863 |
| 30 | NİĞDE ÜNİVERSİTESİ | 246.56 | 892 |
| 31 | ULUDAĞ ÜNİVERSİTESİ | 246.37 | 895 |
| 32 | TOBB EKONOMİ VE TEKNOLOJİ ÜNİVERSİTESİ | 245.77 | 901 |
| 33 | MERSİN ÜNİVERSİTESİ | 234.55 | 963 |
| 34 | AKDENİZ ÜNİVERSİTESİ | 232.84 | 975 |
| 35 | İNÖNÜ ÜNİVERSİTESİ | 218.94 | 1038 |
| 36 | DİCLE ÜNİVERSİTESİ | 214.52 | 1053 |

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|---|---|---|---|
| 37 | ZONGULDAK KARAELMAS ÜNİVERSİTESİ | 209.64 | 1071 |
| 38 | GAZİOSMAN PAŞA ÜNİVERSİTESİ | 207.30 | 1081 |
| 39 | DUMLUPINAR ÜNİVERSİTESİ | 205.50 | 1090 |
| 40 | ONDOKUZ MAYIS ÜNİVERSİTESİ | 197.72 | 1126 |
| 41 | BALIKESİR ÜNİVERSİTESİ | 196.41 | 1130 |
| 42 | FATİH ÜNİVERSİTESİ | 192.28 | 1145 |
| 43 | KIRIKKALE ÜNİVERSİTESİ | 191.19 | 1154 |
| 44 | YEDİTEPE ÜNİVERSİTESİ | 184.49 | 1175 |
| 45 | CELAL BAYAR ÜNİVERSİTESİ | 184.09 | 1178 |
| 46 | AFYON KOCATEPE ÜNİVERSİTESİ | 181.12 | 1186 |
| 47 | CUMHURİYET ÜNİVERSİTESİ | 177.79 | 1197 |
| 48 | ATILIM ÜNİVERSİTESİ | 175.19 | 1208 |
| 49 | DOĞUŞ ÜNİVERSİTESİ | 165.05 | 1242 |
| 50 | MUĞLA ÜNİVERSİTESİ | 153.61 | 1281 |
| 51 | TRAKYA ÜNİVERSİTESİ | 133.88 | 1352 |
| 52 | ÇANKAYA ÜNİVERSİTESİ | 129.34 | 1369 |
| 53 | KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ | 127.12 | 1375 |
| 54 | AKSARAY ÜNİVERSİTESİ | 120.55 | 1399 |
| 55 | ABANT İZZET BAYSAL ÜNİVERSİTESİ | 115.95 | 1413 |
| 56 | KARABÜK ÜNİVERSİTESİ | 115.24 | 1417 |
| 57 | BAHÇEŞEHİR ÜNİVERSİTESİ | 113.10 | 1422 |
| 58 | HARRAN ÜNİVERSİTESİ | 108.13 | 1439 |
| 59 | MUSTAFA KEMAL ÜNİVERSİTESİ | 104.72 | 1453 |
| 60 | YÜZÜNCÜ YIL ÜNİVERSİTESİ | 101.73 | 1463 |
| 61 | ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ | 100.61 | 1469 |
| 62 | DÜZCE ÜNİVERSİTESİ | 99.99 | 1474 |
| 63 | BAŞKENT ÜNİVERSİTESİ | 95.91 | 1489 |
| 64 | İZMİR EKONOMİ ÜNİVERSİTESİ | 94.97 | 1491 |
| 65 | AHİ EVRAN ÜNİVERSİTESİ | 81.77 | 1549 |
| 66 | KAFKAS ÜNİVERSİTESİ | 76.57 | 1575 |
| 67 | BOZOK ÜNİVERSİTESİ | 57.83 | 1660 |
| 68 | RİZE ÜNİVERSİTESİ | 54.80 | 1673 |
| 69 | ADNAN MENDERES ÜNİVERSİTESİ | 53.02 | 1684 |
| 70 | NAMIK KEMAL ÜNİVERSİTESİ | 46.20 | 1721 |
| 71 | ADIYAMAN ÜNİVERSİTESİ | 37.22 | 1785 |
| 72 | GÜLHANE ASKERİ TIP AKADEMİSİ | 35.10 | 1792 |
| 73 | ERZİNCAN ÜNİVERSİTESİ | 32.02 | 1811 |
| 74 | GİRESUN ÜNİVERSİTESİ | 28.35 | 1845 |

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|---|---|---|---|
| 75 | BİNGÖL ÜNİVERSİTESİ | 22.79 | 1867 |
| 76 | MEHMET AKİF ERSOY ÜNİVERSİTESİ | 20.65 | 1888 |
| 77 | SİNOP ÜNİVERSİTESİ | 17.18 | 1910 |
| 78 | ÇANKIRI KARATEKİN ÜNİVERSİTESİ | 12.94 | 1938 |
| 79 | İSTANBUL BİLİM ÜNİVERSİTESİ | 4.14 | 1990 |
| 80 | UFUK ÜNİVERSİTESİ | 0.00 | 2000 |

Table C.4: Life Sciences ($LIFE$)

| No | University | Score | Rank |
|---|---|---|---|
| 1 | HACETTEPE ÜNİVERSİTESİ | 260.20 | 422 |
| 2 | İSTANBUL ÜNİVERSİTESİ | 259.86 | 429 |
| 3 | ANKARA ÜNİVERSİTESİ | 257.58 | 511 |
| 4 | EGE ÜNİVERSİTESİ | 254.94 | 629 |
| 5 | GAZİ ÜNİVERSİTESİ | 254.94 | 630 |
| 6 | ATATÜRK ÜNİVERSİTESİ | 253.57 | 707 |
| 7 | MARMARA ÜNİVERSİTESİ | 253.03 | 746 |
| 8 | DOKUZ EYLÜL ÜNİVERSİTESİ | 251.81 | 834 |
| 9 | ULUDAĞ ÜNİVERSİTESİ | 251.03 | 878 |
| 10 | AKDENİZ ÜNİVERSİTESİ | 251.01 | 879 |
| 11 | ONDOKUZ MAYIS ÜNİVERSİTESİ | 250.74 | 894 |
| 12 | ÇUKUROVA ÜNİVERSİTESİ | 247.53 | 925 |
| 13 | FIRAT ÜNİVERSİTESİ | 246.90 | 931 |
| 14 | GÜLHANE ASKERİ TIP AKADEMİSİ | 242.21 | 956 |
| 15 | SÜLEYMAN DEMİREL ÜNİVERSİTESİ | 240.60 | 967 |
| 16 | ERCİYES ÜNİVERSİTESİ | 235.79 | 985 |
| 17 | ORTA DOĞU TEKNİK ÜNİVERSİTESİ | 232.97 | 999 |
| 18 | SELÇUK ÜNİVERSİTESİ | 228.38 | 1014 |
| 19 | BOĞAZİÇİ ÜNİVERSİTESİ | 220.06 | 1035 |
| 20 | KARADENİZ TEKNİK ÜNİVERSİTESİ | 216.34 | 1054 |
| 21 | BAŞKENT ÜNİVERSİTESİ | 206.46 | 1083 |
| 22 | DİCLE ÜNİVERSİTESİ | 199.39 | 1100 |
| 23 | PAMUKKALE ÜNİVERSİTESİ | 196.50 | 1109 |
| 24 | YEDİTEPE ÜNİVERSİTESİ | 195.98 | 1111 |
| 25 | İNÖNÜ ÜNİVERSİTESİ | 194.31 | 1115 |
| 26 | ADNAN MENDERES ÜNİVERSİTESİ | 191.40 | 1122 |
| 27 | AFYON KOCATEPE ÜNİVERSİTESİ | 190.24 | 1126 |
| 28 | MERSİN ÜNİVERSİTESİ | 183.86 | 1142 |
| 29 | YÜZÜNCÜ YIL ÜNİVERSİTESİ | 181.35 | 1149 |
| 30 | MUSTAFA KEMAL ÜNİVERSİTESİ | 179.89 | 1158 |
| 31 | CELAL BAYAR ÜNİVERSİTESİ | 171.15 | 1181 |
| 32 | TRAKYA ÜNİVERSİTESİ | 168.17 | 1189 |
| 33 | KOCAELİ ÜNİVERSİTESİ | 165.71 | 1203 |
| 34 | ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ | 162.72 | 1211 |
| 35 | CUMHURİYET ÜNİVERSİTESİ | 162.24 | 1213 |
| 36 | ANADOLU ÜNİVERSİTESİ | 160.13 | 1219 |

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|---|---|---|---|
| 37 | GAZİANTEP ÜNİVERSİTESİ | 159.46 | 1222 |
| 38 | HARRAN ÜNİVERSİTESİ | 151.32 | 1241 |
| 39 | ZONGULDAK KARAELMAS ÜNİVERSİTESİ | 147.64 | 1249 |
| 40 | GAZİOSMAN PAŞA ÜNİVERSİTESİ | 135.63 | 1288 |
| 41 | İSTANBUL TEKNİK ÜNİVERSİTESİ | 134.60 | 1293 |
| 42 | KIRIKKALE ÜNİVERSİTESİ | 125.40 | 1325 |
| 43 | ABANT İZZET BAYSAL ÜNİVERSİTESİ | 115.19 | 1354 |
| 44 | BİLKENT ÜNİVERSİTESİ | 108.43 | 1377 |
| 45 | SABANCI ÜNİVERSİTESİ | 105.23 | 1392 |
| 46 | DÜZCE ÜNİVERSİTESİ | 99.74 | 1415 |
| 47 | KOÇ ÜNİVERSİTESİ | 96.73 | 1425 |
| 48 | MUĞLA ÜNİVERSİTESİ | 92.65 | 1442 |
| 49 | İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 90.99 | 1452 |
| 50 | KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ | 89.17 | 1464 |
| 51 | KAFKAS ÜNİVERSİTESİ | 83.60 | 1492 |
| 52 | ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ | 79.69 | 1516 |
| 53 | FATİH ÜNİVERSİTESİ | 72.69 | 1565 |
| 54 | GEBZE YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 67.86 | 1597 |
| 55 | YILDIZ TEKNİK ÜNİVERSİTESİ | 66.61 | 1607 |
| 56 | BALIKESİR ÜNİVERSİTESİ | 52.54 | 1685 |
| 57 | RİZE ÜNİVERSİTESİ | 47.56 | 1709 |
| 58 | SAKARYA ÜNİVERSİTESİ | 45.15 | 1727 |
| 59 | DUMLUPINAR ÜNİVERSİTESİ | 43.31 | 1744 |
| 60 | ADIYAMAN ÜNİVERSİTESİ | 40.85 | 1763 |
| 61 | NİĞDE ÜNİVERSİTESİ | 37.74 | 1784 |
| 62 | UFUK ÜNİVERSİTESİ | 36.33 | 1796 |
| 63 | BOZOK ÜNİVERSİTESİ | 34.28 | 1801 |
| 64 | BİNGÖL ÜNİVERSİTESİ | 31.03 | 1818 |
| 65 | İSTANBUL BİLİM ÜNİVERSİTESİ | 29.39 | 1833 |
| 66 | AKSARAY ÜNİVERSİTESİ | 28.95 | 1837 |
| 67 | NAMIK KEMAL ÜNİVERSİTESİ | 28.66 | 1838 |
| 68 | ERZİNCAN ÜNİVERSİTESİ | 25.64 | 1857 |
| 69 | AHİ EVRAN ÜNİVERSİTESİ | 25.21 | 1859 |
| 70 | GİRESUN ÜNİVERSİTESİ | 24.79 | 1865 |
| 71 | MEHMET AKİF ERSOY ÜNİVERSİTESİ | 21.57 | 1887 |
| 72 | TOBB EKONOMİ VE TEKNOLOJİ ÜNİVERSİTESİ | 17.13 | 1909 |
| 73 | ÇANKAYA ÜNİVERSİTESİ | 17.02 | 1910 |
| 74 | ÇANKIRI KARATEKİN ÜNİVERSİTESİ | 12.35 | 1932 |

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|---|---|---|---|
| 75 | KARABÜK ÜNİVERSİTESİ | 9.05 | 1953 |
| 76 | İZMİR EKONOMİ ÜNİVERSİTESİ | 8.44 | 1958 |
| 77 | BAHÇEŞEHİR ÜNİVERSİTESİ | 8.19 | 1960 |
| 78 | SİNOP ÜNİVERSİTESİ | 6.43 | 1968 |
| 79 | DOĞUŞ ÜNİVERSİTESİ | 4.28 | 1977 |
| 80 | ATILIM ÜNİVERSİTESİ | 3.98 | 1981 |

Table C.5: Natural Sciences ($SCI$)

| No | University | Score | Rank |
|---|---|---|---|
| 1 | ORTA DOĞU TEKNİK ÜNİVERSİTESİ | 267.53 | 417 |
| 2 | İSTANBUL TEKNİK ÜNİVERSİTESİ | 261.75 | 535 |
| 3 | HACETTEPE ÜNİVERSİTESİ | 257.92 | 645 |
| 4 | GAZİ ÜNİVERSİTESİ | 257.49 | 664 |
| 5 | EGE ÜNİVERSİTESİ | 256.61 | 684 |
| 6 | ANKARA ÜNİVERSİTESİ | 256.30 | 693 |
| 7 | BİLKENT ÜNİVERSİTESİ | 255.51 | 724 |
| 8 | İSTANBUL ÜNİVERSİTESİ | 254.87 | 742 |
| 9 | ATATÜRK ÜNİVERSİTESİ | 254.05 | 776 |
| 10 | ERCİYES ÜNİVERSİTESİ | 250.94 | 868 |
| 11 | BOĞAZİÇİ ÜNİVERSİTESİ | 245.99 | 911 |
| 12 | ONDOKUZ MAYIS ÜNİVERSİTESİ | 241.01 | 938 |
| 13 | DOKUZ EYLÜL ÜNİVERSİTESİ | 240.43 | 940 |
| 14 | ANADOLU ÜNİVERSİTESİ | 240.06 | 944 |
| 15 | KOÇ ÜNİVERSİTESİ | 239.87 | 947 |
| 16 | SELÇUK ÜNİVERSİTESİ | 238.77 | 953 |
| 17 | KARADENİZ TEKNİK ÜNİVERSİTESİ | 234.62 | 970 |
| 18 | FIRAT ÜNİVERSİTESİ | 220.65 | 1032 |
| 19 | ÇUKUROVA ÜNİVERSİTESİ | 216.75 | 1048 |
| 20 | GEBZE YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 209.50 | 1086 |
| 21 | ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ | 206.04 | 1100 |
| 22 | YILDIZ TEKNİK ÜNİVERSİTESİ | 204.95 | 1107 |
| 23 | SÜLEYMAN DEMİREL ÜNİVERSİTESİ | 198.57 | 1130 |
| 24 | ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ | 187.03 | 1172 |
| 25 | MARMARA ÜNİVERSİTESİ | 180.86 | 1196 |
| 26 | SABANCI ÜNİVERSİTESİ | 172.08 | 1232 |
| 27 | İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 161.58 | 1264 |
| 28 | SAKARYA ÜNİVERSİTESİ | 161.00 | 1267 |
| 29 | İNÖNÜ ÜNİVERSİTESİ | 159.95 | 1269 |
| 30 | ÇANKAYA ÜNİVERSİTESİ | 159.03 | 1272 |
| 31 | KOCAELİ ÜNİVERSİTESİ | 158.27 | 1276 |
| 32 | ULUDAĞ ÜNİVERSİTESİ | 154.03 | 1288 |
| 33 | AKDENİZ ÜNİVERSİTESİ | 150.82 | 1297 |
| 34 | DİCLE ÜNİVERSİTESİ | 149.01 | 1304 |
| 35 | PAMUKKALE ÜNİVERSİTESİ | 141.54 | 1323 |
| 36 | CUMHURİYET ÜNİVERSİTESİ | 141.41 | 1324 |

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| 37 | KIRIKKALE ÜNİVERSİTESİ | 135.66 | 1345 |
| 38 | GAZİOSMAN PAŞA ÜNİVERSİTESİ | 135.48 | 1347 |
| 39 | FATİH ÜNİVERSİTESİ | 133.11 | 1360 |
| 40 | YÜZÜNCÜ YIL ÜNİVERSİTESİ | 131.53 | 1368 |
| 41 | DUMLUPINAR ÜNİVERSİTESİ | 125.35 | 1395 |
| 42 | BALIKESİR ÜNİVERSİTESİ | 123.94 | 1398 |
| 43 | MERSİN ÜNİVERSİTESİ | 116.90 | 1428 |
| 44 | ATILIM ÜNİVERSİTESİ | 112.78 | 1446 |
| 45 | MUĞLA ÜNİVERSİTESİ | 106.55 | 1474 |
| 46 | NİĞDE ÜNİVERSİTESİ | 104.33 | 1486 |
| 47 | HARRAN ÜNİVERSİTESİ | 103.69 | 1492 |
| 48 | GAZİANTEP ÜNİVERSİTESİ | 99.42 | 1519 |
| 49 | TOBB EKONOMİ VE TEKNOLOJİ ÜNİVERSİTESİ | 97.37 | 1531 |
| 50 | AFYON KOCATEPE ÜNİVERSİTESİ | 93.43 | 1551 |
| 51 | YEDİTEPE ÜNİVERSİTESİ | 93.34 | 1553 |
| 52 | ZONGULDAK KARAELMAS ÜNİVERSİTESİ | 90.61 | 1567 |
| 53 | CELAL BAYAR ÜNİVERSİTESİ | 88.07 | 1577 |
| 54 | ABANT İZZET BAYSAL ÜNİVERSİTESİ | 83.83 | 1601 |
| 55 | AHİ EVRAN ÜNİVERSİTESİ | 79.68 | 1625 |
| 56 | KAFKAS ÜNİVERSİTESİ | 74.87 | 1657 |
| 57 | TRAKYA ÜNİVERSİTESİ | 73.08 | 1667 |
| 58 | KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ | 70.95 | 1681 |
| 59 | ADNAN MENDERES ÜNİVERSİTESİ | 70.62 | 1684 |
| 60 | MUSTAFA KEMAL ÜNİVERSİTESİ | 70.39 | 1686 |
| 61 | ADIYAMAN ÜNİVERSİTESİ | 65.55 | 1713 |
| 62 | KARABÜK ÜNİVERSİTESİ | 63.59 | 1731 |
| 63 | RİZE ÜNİVERSİTESİ | 58.50 | 1764 |
| 64 | BOZOK ÜNİVERSİTESİ | 57.67 | 1770 |
| 65 | AKSARAY ÜNİVERSİTESİ | 57.41 | 1772 |
| 66 | DOĞUŞ ÜNİVERSİTESİ | 56.08 | 1783 |
| 67 | BAŞKENT ÜNİVERSİTESİ | 55.54 | 1787 |
| 68 | BAHÇEŞEHİR ÜNİVERSİTESİ | 44.08 | 1852 |
| 69 | SİNOP ÜNİVERSİTESİ | 43.90 | 1853 |
| 70 | İZMİR EKONOMİ ÜNİVERSİTESİ | 43.72 | 1855 |
| 71 | GÜLHANE ASKERİ TIP AKADEMİSİ | 31.86 | 1924 |
| 72 | ERZİNCAN ÜNİVERSİTESİ | 31.26 | 1929 |
| 73 | GİRESUN ÜNİVERSİTESİ | 30.24 | 1930 |
| 74 | DÜZCE ÜNİVERSİTESİ | 28.32 | 1940 |

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|---|---|---|---|
| 75 | NAMIK KEMAL ÜNİVERSİTESİ | 27.21 | 1943 |
| 76 | BİNGÖL ÜNİVERSİTESİ | 24.79 | 1951 |
| 77 | MEHMET AKİF ERSOY ÜNİVERSİTESİ | 19.49 | 1966 |
| 78 | ÇANKIRI KARATEKİN ÜNİVERSİTESİ | 17.62 | 1970 |
| 79 | İSTANBUL BİLİM ÜNİVERSİTESİ | 1.30 | 1999 |
| 80 | UFUK ÜNİVERSİTESİ | 1.12 | 2000 |

Table C.6: Social Sciences ($SOC$)

| No | University | Score | Rank |
|---|---|---|---|
| 1 | ORTA DOĞU TEKNİK ÜNİVERSİTESİ | 267.70 | 330 |
| 2 | BİLKENT ÜNİVERSİTESİ | 264.06 | 390 |
| 3 | HACETTEPE ÜNİVERSİTESİ | 261.89 | 442 |
| 4 | GAZİ ÜNİVERSİTESİ | 259.60 | 502 |
| 5 | ANKARA ÜNİVERSİTESİ | 257.02 | 565 |
| 6 | KOÇ ÜNİVERSİTESİ | 256.17 | 599 |
| 7 | İSTANBUL TEKNİK ÜNİVERSİTESİ | 255.79 | 612 |
| 8 | SELÇUK ÜNİVERSİTESİ | 255.57 | 620 |
| 9 | BOĞAZİÇİ ÜNİVERSİTESİ | 255.46 | 635 |
| 10 | DOKUZ EYLÜL ÜNİVERSİTESİ | 254.72 | 671 |
| 11 | İSTANBUL ÜNİVERSİTESİ | 253.20 | 759 |
| 12 | SABANCI ÜNİVERSİTESİ | 251.42 | 819 |
| 13 | BAŞKENT ÜNİVERSİTESİ | 251.26 | 822 |
| 14 | EGE ÜNİVERSİTESİ | 250.06 | 838 |
| 15 | MARMARA ÜNİVERSİTESİ | 249.83 | 840 |
| 16 | FIRAT ÜNİVERSİTESİ | 248.66 | 856 |
| 17 | ULUDAĞ ÜNİVERSİTESİ | 247.87 | 863 |
| 18 | YILDIZ TEKNİK ÜNİVERSİTESİ | 243.72 | 887 |
| 19 | ERCİYES ÜNİVERSİTESİ | 240.44 | 915 |
| 20 | KARADENİZ TEKNİK ÜNİVERSİTESİ | 239.95 | 922 |
| 21 | ATATÜRK ÜNİVERSİTESİ | 234.71 | 946 |
| 22 | AKDENİZ ÜNİVERSİTESİ | 215.12 | 1024 |
| 23 | İZMİR EKONOMİ ÜNİVERSİTESİ | 214.73 | 1028 |
| 24 | PAMUKKALE ÜNİVERSİTESİ | 214.55 | 1031 |
| 25 | ÇUKUROVA ÜNİVERSİTESİ | 212.94 | 1039 |
| 26 | ANADOLU ÜNİVERSİTESİ | 212.78 | 1040 |
| 27 | ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ | 191.48 | 1135 |
| 28 | ABANT İZZET BAYSAL ÜNİVERSİTESİ | 183.77 | 1168 |
| 29 | SAKARYA ÜNİVERSİTESİ | 180.08 | 1178 |
| 30 | FATİH ÜNİVERSİTESİ | 179.28 | 1182 |
| 31 | TOBB EKONOMİ VE TEKNOLOJİ ÜNİVERSİTESİ | 172.83 | 1198 |
| 32 | SÜLEYMAN DEMİREL ÜNİVERSİTESİ | 171.64 | 1203 |
| 33 | GAZİANTEP ÜNİVERSİTESİ | 161.73 | 1235 |
| 34 | GEBZE YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 152.80 | 1264 |
| 35 | KOCAELİ ÜNİVERSİTESİ | 151.95 | 1266 |
| 36 | MUĞLA ÜNİVERSİTESİ | 150.23 | 1271 |

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| 37 | ONDOKUZ MAYIS ÜNİVERSİTESİ | 148.25 | 1274 |
| 38 | BAHÇEŞEHİR ÜNİVERSİTESİ | 144.14 | 1284 |
| 39 | DİCLE ÜNİVERSİTESİ | 141.14 | 1290 |
| 40 | MERSİN ÜNİVERSİTESİ | 134.15 | 1317 |
| 41 | YEDİTEPE ÜNİVERSİTESİ | 133.77 | 1322 |
| 42 | ZONGULDAK KARAELMAS ÜNİVERSİTESİ | 126.66 | 1353 |
| 43 | NİĞDE ÜNİVERSİTESİ | 119.89 | 1368 |
| 44 | DUMLUPINAR ÜNİVERSİTESİ | 111.74 | 1391 |
| 45 | MUSTAFA KEMAL ÜNİVERSİTESİ | 110.82 | 1396 |
| 46 | KIRIKKALE ÜNİVERSİTESİ | 105.68 | 1414 |
| 47 | CUMHURİYET ÜNİVERSİTESİ | 104.45 | 1420 |
| 48 | ÇANKAYA ÜNİVERSİTESİ | 102.71 | 1426 |
| 49 | İNÖNÜ ÜNİVERSİTESİ | 101.51 | 1434 |
| 50 | AFYON KOCATEPE ÜNİVERSİTESİ | 100.64 | 1439 |
| 51 | TRAKYA ÜNİVERSİTESİ | 99.95 | 1441 |
| 52 | ADNAN MENDERES ÜNİVERSİTESİ | 99.88 | 1443 |
| 53 | ATILIM ÜNİVERSİTESİ | 97.82 | 1450 |
| 54 | GAZİOSMAN PAŞA ÜNİVERSİTESİ | 93.78 | 1462 |
| 55 | CELAL BAYAR ÜNİVERSİTESİ | 92.88 | 1467 |
| 56 | DOĞUŞ ÜNİVERSİTESİ | 91.69 | 1474 |
| 57 | HARRAN ÜNİVERSİTESİ | 87.81 | 1496 |
| 58 | BALIKESİR ÜNİVERSİTESİ | 83.81 | 1512 |
| 59 | GÜLHANE ASKERİ TIP AKADEMİSİ | 82.18 | 1515 |
| 60 | KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ | 77.75 | 1540 |
| 61 | YÜZÜNCÜ YIL ÜNİVERSİTESİ | 65.61 | 1594 |
| 62 | ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ | 64.95 | 1597 |
| 63 | DÜZCE ÜNİVERSİTESİ | 48.98 | 1680 |
| 64 | RİZE ÜNİVERSİTESİ | 36.54 | 1758 |
| 65 | İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜ | 35.52 | 1764 |
| 66 | KAFKAS ÜNİVERSİTESİ | 34.43 | 1770 |
| 67 | ADIYAMAN ÜNİVERSİTESİ | 29.21 | 1821 |
| 68 | MEHMET AKİF ERSOY ÜNİVERSİTESİ | 24.22 | 1860 |
| 69 | KARABÜK ÜNİVERSİTESİ | 21.75 | 1874 |
| 70 | GİRESUN ÜNİVERSİTESİ | 21.06 | 1879 |
| 71 | AHİ EVRAN ÜNİVERSİTESİ | 20.71 | 1882 |
| 72 | İSTANBUL BİLİM ÜNİVERSİTESİ | 20.13 | 1884 |
| 73 | NAMIK KEMAL ÜNİVERSİTESİ | 15.49 | 1912 |
| 74 | BOZOK ÜNİVERSİTESİ | 13.40 | 1927 |

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|---|---|---|---|
| 75 | AKSARAY ÜNİVERSİTESİ | 12.95 | 1931 |
| 76 | ERZİNCAN ÜNİVERSİTESİ | 12.65 | 1936 |
| 77 | ÇANKIRI KARATEKİN ÜNİVERSİTESİ | 10.37 | 1952 |
| 78 | UFUK ÜNİVERSİTESİ | 6.18 | 1979 |
| 79 | BİNGÖL ÜNİVERSİTESİ | 0.32 | 1993 |
| 80 | SİNOP ÜNİVERSİTESİ | 0.00 | 1998 |