

Scientific Publications by the Faculty of the College of Science, UP Diliman: September 1988 to May 1998

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ABSTRACT

We present a comprehensive survey of the scientific publications by the Faculty (Professors, Associate Professors, and Assistant Professors) of the College of Science, UP Diliman. The initial listings are obtained from UNCOVER and MEDLINE databases which are freely available in the Internet. Our search covers articles that have been published between September 1988 and May 1998. Books and conference proceedings are excluded. Performance analysis is done along academic ranks and units. Final tally considers only journals covered by the Science Citation Index. Based on our tally, no academic unit has achieved the rule of thumb for research excellence which is at least one internationally-abstracted publication per faculty per year.

INTRODUCTION

Every researcher aims to publish in a peer-reviewed journal. Publication strongly indicates that his or her work is new, original, timely, and scientifically valid (Note 1). To many, the publication of research findings is the fitting culmination of a process that typically involves long, arduous hours of thought and experimentation.

A university earns its reputation from the contributions that it has made to advance the sciences, the humanities, culture and the arts. Academic reputation does not grow from the number of baccalaureate degrees being offered, nor from the number of students and faculty members being sheltered. It is primarily derived from the research output of the academic community that the university nurtures.

This paper presents a comprehensive survey of the scientific publications by the Faculty (Professors,

Associate Professors, and Assistant Professors) of the College of Science (CS) in the University of the Philippines (UP) - Diliman Campus. The initial listings are searched from publicly accessible Internet databases and cover all papers from September 1988 to May 1998. Books and conference proceedings are excluded. Final tally considers only journals covered by the Science Citation Index, which is published by the Institute for Scientific Information (ISI) (Note 2).

The survey serves several important purposes. One is that it offers a detailed record of the research performance of the CS faculty and academic units. It also provides information on the research areas where CS is strong or promising. Further, it informs aspiring science students that world-class research is pursued in the Philippines. The survey complements previous investigations done on the research productivity of Filipino scientists (Lacanilao, 1996; 1997).

The survey will likely instigate intense discussions among faculty, University administrators, and students. Such discussions will help improve the status of the University. In this age of globalization, a comparison will always be made between the UP and other foreign universities in terms of academic excellence (Notes 3

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& 4). If world-class status is to be achieved and secured, then it is essential that UP identifies the factors that stifle the research productivity of its faculty.

Our presentation is organized as follows: Section II gives background information about the College of Science and the Internet databases used for the search, while Section III presents our search results which are then discussed and analyzed in Section IV.

BACKGROUND INFORMATION AND SEARCH METHODOLOGY

The College of Science (Note 5)

As of May 1998, the College of Science (CS) has 159 faculty members distributed as follows: one university professor, 59 full professors (FP), 40 associate professors (AP), and 59 assistant professors (aP). Instructors, teaching assistants, fellows and associates who are mostly graduate students, are not considered since they do not serve as research supervisors. The CS student population in the second semester, AY 1997-98, was 2023 including 600 graduate students.

The College consists of the following academic units (Fig. 1): (a) Institute of Biology (IB; FP = 11, AP = 7, aP = 12); (b) Institute of Chemistry (IC; FP = 8, AP = 10, aP = 8); (c) Department of Mathematics (DM; FP = 17, AP = 7, aP = 20); (d) Department of Meteorology and Oceanography (DMO; FP = 1, AP = 2, aP = 3); (e) Molecular Biology and Biotechnology Program (MBB; FP = 2, AP = 2, aP = 1); (f) Marine Science Institute [MSI; FP (including 1 university professor) = 9, AP = 4, aP = 2]; (g) National Institute of Geological Sciences (NIGS; FP = 3, AP = 2, aP = 5); (h) National Institute of Physics (NIP; FP = 8, AP = 5, aP = 7); (i) Environmental Science Program (ESP; FP = 0, AP = 1, aP = 1); and (j) Dean's Office (DO; FP = 1). All units offer undergraduate degree programs except MSI, DMO, and ESP. One professor affiliated with the Science and Society Program (SSP) is listed under the Dean's Office.

The average number of faculty per CS unit (excluding DO, ESP, and MBB) is 21.6.

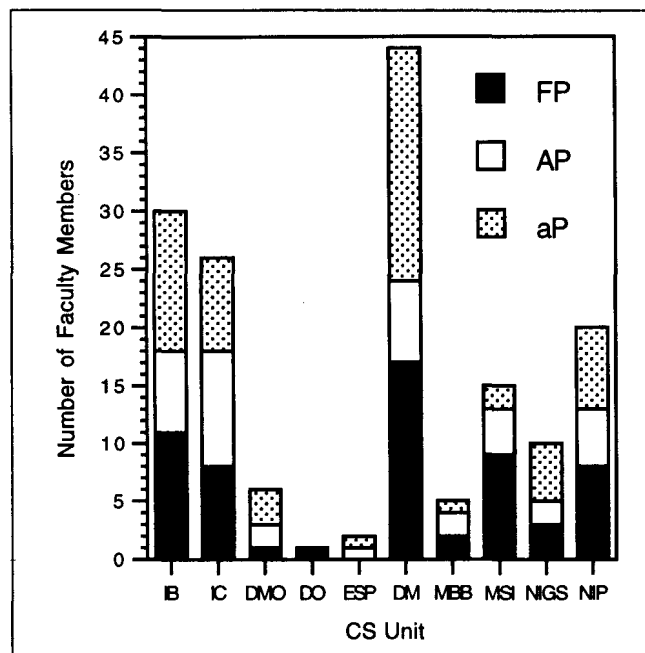


Fig. 1. Distribution of faculty members in each CS unit (FP = full professor; AP = associate professor; aP = assistant professor).

Databases

Two journal publications databases, UnCover (Note 6) and MEDLINE (Note 7) were used to search for publications information. Both are accessible (subscription-free) from any computer terminal that is hooked up to the Internet and are now very popular among researchers worldwide.

UnCover is a database of current article information taken from over 17,000 multidisciplinary journals. UnCover contains brief descriptive information for over 7,000,000 articles which have appeared since Fall 1988. The UnCover database is exhaustive — it even includes the Philippine Journal of Science which is not abstracted in the SCI or INSPEC (Note 8).

Medline is the U.S. National Library of Medicine's (NLM) premier bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and the preclinical sciences. It contains over 9,000,000 bibliographic citations (e.g. authors, title, and journal reference) and author abstracts

from over 3,800 biomedical journals published in the United States and 70 other countries.

Count Criterion

The author's name (for UnCover) or affiliation (for MEDLINE) was used to search for all possible publications of each individual (Note 9). The publication information gathered was then tabulated and cross-referenced against the Institute for Scientific Information (ISI) Master Journal Coverage List (ISI-MJCL) (Note 2). The ISI publishes the Science Citation Index (SCI). Only publications found in the ISI-MJCL were counted in the final tally of publications.

We would have wanted to search directly in the SCI and INSPEC databases but we did not have the proper authorization for access. The CS library only has the 1994-1997 editions of the SCI on CD-ROM. Only the SCI journal list is freely available to the public (Note 2).

RESULTS

Sources of Error

The UnCover database allows only three search fields, namely author or name, keywords, and journal title. This limited the publications search to the author/name field only. Searches for common-sounding, usually Spanish-sounding names (e.g. Solis, Miranda, Gomez) yielded results ranging from hundreds to thousands of hits. For result counts in the hundreds, each publication information was analyzed. Those publications deemed to be within the faculty's field of expertise were included in the final tally. For searches that yielded thousands of hits, the middle initial was included in the search query (e.g. Gomez E D) (Note 10). An even more stringent search query (used only once) was to include a keyword together with the author field (e.g. Salvador A A/condensed matter).

During the course of compilation, it was discovered that typographical errors existed in the database itself (e.g. misspelled first name) (Note 11). Problems like these were rare, but they did exist.

Note that the UnCover database, though large, does not list all journals in the ISI-MJCL. In this regard, there may be cases of under-reporting of ISI-journals publication information. It is also useful to note that aside from the ISI, field-specific databases are used by a great number of scientists worldwide (e.g. INSPEC for physicists, engineers and computer scientists; MEDLINE for those in the biological sciences)

Data Plots

Fig. 2 shows the number of publications of the current faculty members of each CS unit for the surveyed time period. Fig. 3 shows the number of publications of the same faculty but only those made while affiliated with UP Diliman were included. The National Institute of Physics recorded the largest number of publications as a unit.

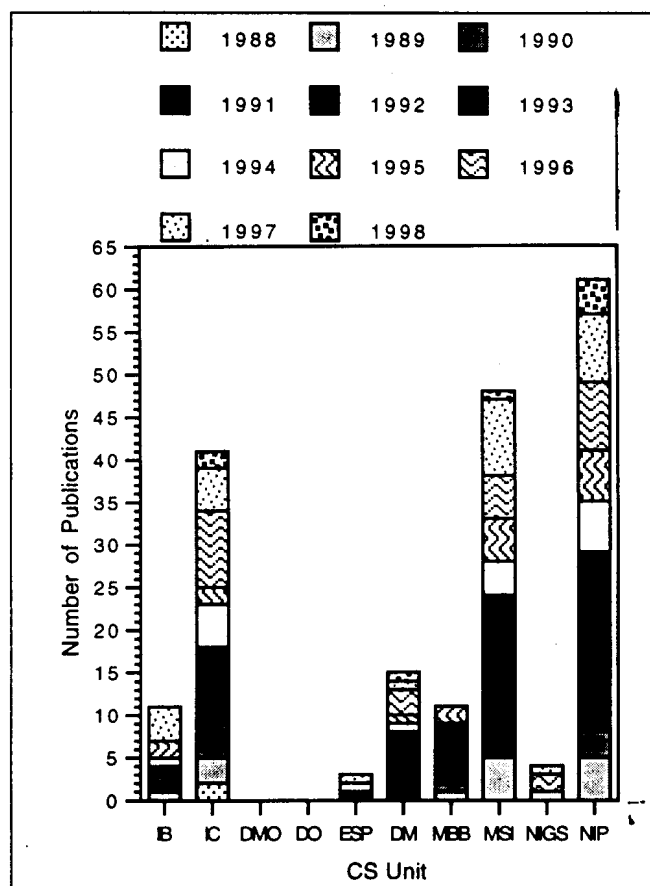


Fig. 2. Publications of all current CS faculty for the period 1988-1998.

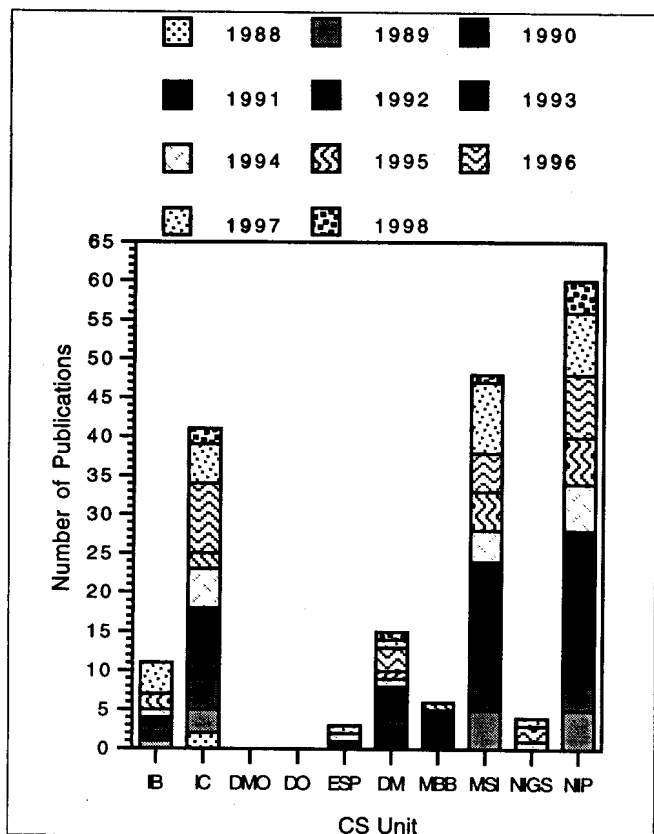


Fig. 3. Publications of all current CS faculty with University of the Philippines-affiliation at the time of publication.

Fig. 4 shows the per capita output of each faculty member or the publication per faculty member per year (PPF) ratio. The PPF ratio was obtained using:

$$PPF = \frac{\text{number of publications}}{\text{number of faculty members}} \div 10$$

This ratio is indicative of the productivity of the entire unit. It is notable here that although the NIP has the largest output as a unit, it is the Marine Science Institute (MSI) which has the largest PPF.

DISCUSSION

Survey results indicate that the MSI and NIP are the leading producers of ISI-grade publications in the College of Science. Fig. 4 shows that the PPFs of these institutes are at least twice as large as that of any

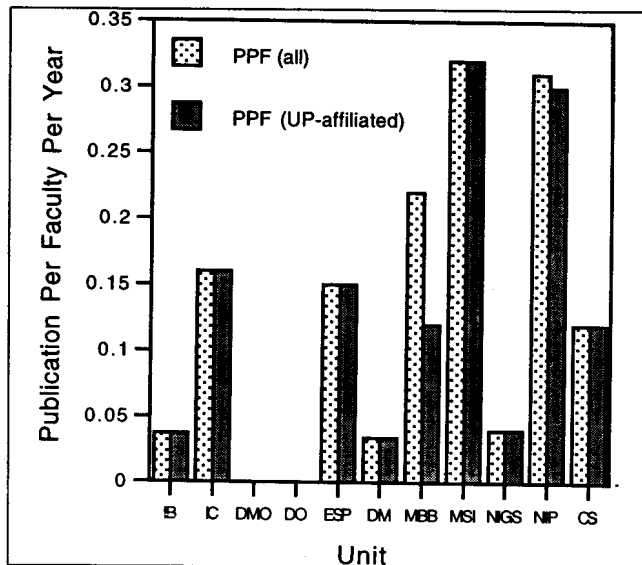


Fig. 4. Publication per faculty member per year (PPF).

other in the college. It is also worthwhile to note that the number of faculty who have published in the last ten years is larger in MSI than in NIP. The PPF value of NIP is high only because of the large publications output of a few faculty members during the said survey period. Figs. 1 and 4 indicate that the PPF performance is not correlated to the number of full professors in an academic unit – DM and IB have the biggest numbers but their PPFs are among the lowest.

Why are MSI and NIP productive? Certainly it is not because their faculty have light teaching duties — the NIP offers two baccalaureate degrees (BS Physics and BS Applied Physics) in addition to its MA, MS and PhD programs. It is also not because their research projects are cost-free. Running a biological marine station or maintaining high-powered laser systems and computer networks all require a considerable amount of steady funding. In our view, most faculty in these units do not only recognize the paramount importance of research in the academic life, but also understand that a publication in a widely-disseminated peer-reviewed journal is of paramount importance in a research project.

Mere counting of the publications that a researcher has authored is just the easiest way of assessing productivity. It is not the most discriminating way of evaluating his

or her ability as a scientist. The ISI abstracts millions of published papers and only a few of them are cited by other authors in their work. In any given field of research, some journals are also more read than others and these journals often have very high rejection rates. Another issue concerns the impact that the publication has made in developing the research infrastructure of the College. A paper resulting from an experiment that was done in another (foreign) university will not have as much effect as that which is done in the College. If we consider the criteria of citation number, journal impact factor, and local component into our study the performance of CS units is very depressing.

CONCLUSION

Publishable research is possible in the College of Science. Several faculty members of the College have demonstrated this capability (Note 9). The College, as a whole, however, is not performing satisfactorily. A good rule of thumb to indicate excellence in research is a PPF value of unity for each academic unit.

There are apparent ways of achieving a unity-valued PPF. The College can downsize its faculty to reduce the denominator value in the PPF expression or it can increase the numerator value by increasing the research publication output, or both. Research productivity is realized if every member of the CS faculty realizes that it is research publishing that primarily matters. At present there are three routes to upward mobility in the academic ladder: (1) administration, (2) teaching, and (3) research. The College system for academic promotion is rightly biased towards research performance (Note 12). Our survey reveals that many associate and full professors have attained their current ranks despite having very low PPF values — a paradoxical situation that does not bode well with UP's goal of achieving world-class status by the turn of the century (Yanga & Llaguno, 1998).

ACKNOWLEDGMENT

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NOTES

1. Committee on Science, Engineering, and Public Policy: National Academy of Sciences, National Academy of Engineering, Institute of Medicine. *On Being a Scientist: Responsible Conduct in Research*. Second Edition. National Academy Press, Washington DC (1995). Also available online at: <http://www.nap.edu/readingroom/records/0309051967.html>
2. ISI journal listing is available at: <http://www.isinet.com/>
3. See articles in *Science* (Focus Issue: Science in Southeast Asia; 6 March 1998)
4. See articles and rankings in *Asiaweek* (Focus Issue: Asia's Best Universities; 15 May 1998). Also available online at: <http://www.pathfinder.com/asiaweek/98/0515/cs1.html>
5. Basic information is obtained from the UP College of Science (Dean's Office and Secretary's Office)
6. The UnCover Company. Welcome to UnCoverWeb! <http://uncweb.carl.org/>
7. U.S. National Library of Medicine. <http://www.nlm.nih.gov/>
8. Institution of Electrical Engineers. <http://www.iee.org.uk/publish/inspec.html>
9. Detailed instructions in accessing these databases are in the Appendix.
10. Complete search results are available online at: http://nip.upd.edu.ph/ipl/sci_diliman/
11. This kind of error was discovered in a publication with two authors coming from the University of the Philippines. The publication came up in a search for only one of the authors; it did not come up in the other because the other author's name was misspelled.
12. Faculty Accomplishment Form, College of Science, Univ of the Philippines

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Lacanilao, F., 1996. Understanding research and development. *The CODHEND Teacher* 7(1):1-6.

_____, 1997. How to improve R and D capability. Paper presented at the 1997 UP Faculty Conference, UP Diliman.

Yanga, D. & C. Llaguno, 1998. Propelling advanced science and engineering education to the next millenium. Paper presented at the 1998 UP Faculty Conference, UP Diliman.

APPENDIX

List A. Details of the Uncover Database Search

1. Go to <http://uncweb.carl.org>
2. Click on "Search the UnCover Database"
3. Click on "Search UnCover Now"
4. Use the following parameters
UnCover database: *UnCover*
search terms: *last_name*
(first_name or first_initial)
search type: *name or author*
5. Click on "Enter"

List B. Details of the MEDLINE Database Search Through PubMed

1. Go to <http://www.ncbi.nlm.nih.gov/PubMed/medline.html>
2. Use the following parameters
Search Field: *Affiliation*
Search Query: *University of the Philippines Diliman*
3. Click on "Search"
4. Click on "Retrieve Documents"