Article

PhD Graduation in the University of the Philippines: Trends, Challenges, and Policy Implications[1]

Caesar Saloma[2]

Abstract

The following are the yearly PhD graduation rates of the three leading constituent units of the University of the Philippines: UP Diliman (65.91 ± 15.48, with 70 doctoral programs in 2025; sampling period: 1990-2025), UP Los Baños (58.46 ± 14.26, with 33; 1999-2025), and UP Manila (4.22 ± 4.23, with 11; 1993-2025). The rates are low with no apparent tendency to improve despite escalated allocations of resources to hire more PhD faculty and to establish new research laboratories and PhD programs. The number of regular PhD faculty in June 2023 was 614 for UP Diliman, 211 for UP Los Baños, and 110 for UP Manila. A total of 202 UP professor emeriti were also appointed (65.84% since 2012) from 2000 to 2024. To increase the PhD graduation rate, data-driven policy recommendations are proposed in the grant of faculty tenure, and cross-rank promotion to full professor and professor emeritus. They are formulated with reference to the performance of the UP Diliman College of Science (CS,

1 This work is supported by a Source of Solutions Grant (Project No. 232304 SOS) from the Office of the UP Diliman Chancellor through the Office of the Vice-Chancellor for Research and Development.

2 Professor Emeritus, National Institute of Physics, University of the Philippines Diliman, casaloma@up.edu.ph

13.14 ± 4.26 per year; with 11 programs) and the College of Engineering (CoE, 6.06 ± 5.4; 12 programs). Both accounted for 29.19% of the total UP Diliman PhD output from 1990 to 2025. The primary reason for the low PhD graduation rate is the lack of committed dissertation research supervisors who were able to guide students immediately upon entering their respective programs. From 2010 to 2025, UP Diliman yearly admitted 239.6 ± 33.41 (31.14% in the CS and CoE) new PhD students while graduating only 71.47 ± 10.82 (33.93% with CS and CoE degrees). Sustained student interest is not matched by a likelihood of success which is only at 29.83%. In contrast, UP Diliman graduated a total of 49,721 bachelor students while admitting 59,085 UPCAT applicants indicating an efficiency of 84.15%. The purpose of UP as the national university is best accomplished by it becoming a successful graduate university since PhD degrees are research degrees where dissertation research problems are solved to promote the common good and bring tangible improvements in the quality of life of Filipinos.

Keywords: University of the Philippines, PhD Degree Programs, Faculty Tenure, Philippine Higher Education Institutions

Introduction

UP became the national university of the country (July 2024 population: 112.7295M) on 29 April 2008 when President Gloria Macapagal-Arroyo signed Republic Act (RA) No. 9500 also known as An Act to Strengthen the University of the Philippines as the National University (Official Gazette 2008). UP was established by the American colonial government on 18 June 1908 through the ratification of Act No. 1870 of the First Philippine Legislature (University of the Philippines 2022). It is currently composed of eight constituent universities (CUs) namely, UP Diliman, UP Los Baños, UP Manila, UP Visayas, UP Open University, UP Mindanao, UP Baguio, and UP Cebu, in seventeen campuses across the Philippine archipelago.

There were a hundred and twelve Universities and Colleges (SUCs) including UP in AY 2019-2020 (CHED 2023). From FY 2006 to FY 2016, UP received 27.36 ± 1.32 percent of the total SUC budget allocation in the annual General Appropriation Act. The UP budget was 1.93 and 0.63 times that of the Department of Science and Technology (DOST) in FY 2006 and FY 2016, respectively (Saloma 2016). From FY 2020 to FY 2022, the average UP Budget was 26.38 ± 1.2 percent of the yearly SUC allocation (DBM 2020, DBM 2021, DBM 2022).

UP undergraduates fully enjoy the provisions of RA 10931 – Universal Access to Quality Tertiary Education Act, that institutionalizes free tuition and exemption from other fees in public universities and colleges unlike their counterparts in private HEIs (Official Gazette 2017). The provisions of RA 10931 do not also apply to students enrolled in graduate degree programs. As the national university, UP must lead in establishing academic standards and in initiating innovations in teaching, research, and faculty development [RA 9500 Section 3]. It is mandated to function as a graduate, research, and public service university while serving as a reference standard of academic governance and administration. It must also perform as a regional and global university that produces verifiable examples of best practices for other HEIs to emulate and adopt.

Measuring the degree in which UP has been able to accomplish its stated purpose is a challenging task. Metrics must be developed to achieve transparency and accountability as well as to enable UP to improve its institutional performance through time. The success of UP as a graduate university is not measured by the number of its PhD or doctoral degree programs nor by the number of full-time (regular) PhDs in its faculty roster, which are merely inputs. Success is gauged by the number of PhD graduates that are produced yearly from the arts and letters to the sciences, technology, engineering, and mathematics (STEM).

Proficient STEM PhD programs are the most reliable source of technically competent self-assured Filipino scientists and researchers who will capacitate Philippine society to collectively anticipate, respond, and formulate evidence-based solutions to the complex challenges that Filipino citizens, institutions, and enterprises encounter every day. The spectrum of societal problems that

is in dire need of resolution, ranges from fragile food and energy security to pesky vehicular traffic, wasteful queuing in government offices, and graft and corruption.

The PhD degree is a research degree that is awarded to a qualified student who has made an original, novel, and significant contribution to the body of scientific knowledge under the guidance of a dissertation research supervisor. Only faculty members with the requisite PhD degree can serve as a dissertation research supervisor. Having UP faculty and researchers publish their research findings in reputable peer-reviewed journals is just one of the two critical features of a thriving graduate university. The other is PhD graduate production that should improve ideally with time as a consequence of the increasing number of applications in the UP College Admission Test (UPCAT). The Philippine population grew from 75.33M in 2000 to 109.04M (+44.75% increase) in 2020 (PSA 2021).

Here, we analyze the PhD graduation rates of UP Diliman, UP Los Baños, and UP Manila with the aim of formulating new measures to improve the graduation performance. For reference and context, we also examine the PhD Physics program of the National Institute of Physics (NIP) which is one of the ten degree-granting academic units of the College of Science (CS) in UP Diliman. We also compare the PhD graduation rates with the bachelor's graduation rates relative to the number of UPCAT applicants admitted yearly to determine if there a difference in the efficiency that UP produces PhD and bachelor's graduates.

The reputation of a PhD program critically depends on the ability of its PhD faculty to steadily attract talented students and enable them to finish in due time. Less than one percent of Philippine HEIs today offer tenable STEM PhD programs due to the lack of qualified PhD faculty and to the high cost of establishing STEM research laboratories (Saloma 2019). More HEIs are needed in various parts of the archipelago to enable the domestic scientific enterprise system to thrive and make a tangible impact in reducing income inequality and enhancing socio-economic inclusivity in Philippine society (Saloma 2021).

Graduation Requirements: Bachelor's and Graduate Degrees

Undergraduate admission into UP is based on merit and has become more competitive because the number of available slots has not increased in proportion to the number of yearly applicants who will compete through the UPCAT and/or talent test/audition. For admission to the graduate programs, applicants must possess the requisite bachelor's degree from a recognized HEI and show proof of intellectual capacity to tackle the demands of graduate work. Rules, guidelines and policies regarding entrance and graduation requirements in the undergraduate and graduate degree programs offered by the CUs are stated in the UPD Faculty Manual 2003 (OSU 2003), Faculty Manual Update 2005 (OAT 2005), and the Code of Student Conduct of UP Diliman 2012 (OSU 2012). The UP Board of Regents (BOR) is the highest policy making body of UP.

Students who satisfied the prescribed academic and other requirements are granted their degrees by the BOR upon the recommendation of the concerned CU University Council. Undergraduate students who complete their courses with the following absolute minimum general weighted average (GWA) shall be graduated with Latin honors: *Summa cum laude* (1.20), *Magna cum laude* (1.45), and *Cum Laude* (1.75). The GWA computation applies only to subjects prescribed in the curriculum, as well as to subjects that qualify as electives. Subjects that do not require the numerical system of grading (e.g., Pass or Fail, Satisfactory or Unsatisfactory) are excluded. No corresponding Latin honors are bestowed to master's and PhD graduates.

Data Presentation and Analysis

The data sets presented here were collected, organized, updated, and processed over the years. They were provided to the author in response to specific requests, by pertinent offices of UP, UP Diliman and College of Science (CS). These offices include the OVPAA, Office of the University Registrar of UP Diliman, UP Diliman Human Resource Development Office and the Office of the CS Dean and the National Institute of Physics. Additional information regarding the graduate scholarship programs of the Department of Science and Technology (DOST) were provided by the DOST Science and Education Institute, and the National Academy of Science and Technology.

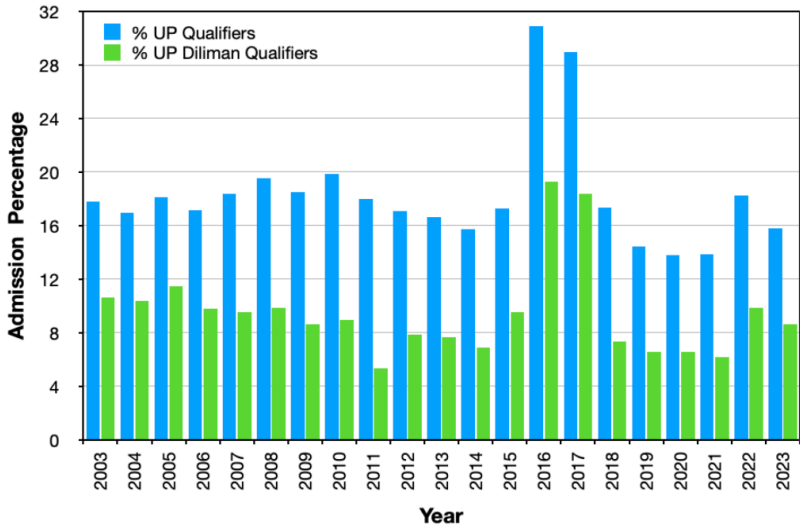
UPCAT Application and UP Admission Rates

From 2003 to 2023, applications to UP and UP Diliman increased at annual rates of 2,206.6 and 1,614 (by linear regression) respectively, when the data for the outlier years of 2016 and 2017 are excluded. More than sixty percent (62.56 ± 0.045) of UPCAT applicants preferred to enroll in UP Diliman. The consequence of increasing the number of years from four to six (K-12) in the high school curriculum was felt in 2016 and 2017 when the number of applicants decreased significantly by one order of magnitude with 89 percent of them signifying to study in UP Diliman. The written-test component of the UPCAT was suspended for applications filed in the first three pandemic years of 2020, 2021, and 2022. It was re-imposed in 2023.

Figure 1 presents the annual admission rate of UP (blue) and UP Diliman (green) applicants from 2003 to 2023. The rate is computed as the ratio between the number of qualifiers and the number of applicants times 100%. The yearly UPCAT admission rates of UP and UP Diliman were 17.07 ± 1.72 and 8.51 ± 1.71 including figures for the transition years of 2016 (30.88%; 19.27%) and 2017 (28.99%; 18.39%). The yearly admission rates were decreasing at -0.1732% (UP) and -0.18% (UP Diliman) when 2016 and 2017 are excluded.

The decline in admission rate happens since the steady rise in yearly UPCAT applications is not matched by a proportional increase in the number of admission slots. The available UP admission slots per year was 12,617.31 ±

987.32 from 2003 to 2016. In the transition years of 2016 and 2017, it decreased markedly to 1574.5 ± 23.34 representing a nominal deficit of 11,143.3 per year. From 2018 to 2022, the number was increased to 14,008.4 ± 1520.91 which is still insufficient to compensate for the deficit during the transition years. The average number of UP Diliman qualifiers per year was 4020.15 ± 503.44 from 2003 to 2015. It decreased significantly to 881.5 ± 9.19 in 2016 and 2017. The number of qualifiers then recovered to 4,426.6 ± 818.24 per year from 2018 to 2023.



■ **Figure 1.** Yearly admission rate of UP (blue) and UP Diliman (green) applicants from 2003 to 2023. Excluding 2016 and 2017, the annual admission rates were decreasing at -0.17% (UP) and -0.18% (UP Diliman).

Table 1 compares the yearly admission rates of UP, UP Diliman, UP Los Baños, UP Manila, and UP Baguio. The four CUs (UP Diliman: 66.51%; UP Los Baños: 10%; UP Manila: 2.29%, UP Baguio: 9.91%) were the first preference of 88.71% of all UPCAT applicants (328,517) from 2012 to the outlier year 2016. UP Diliman had the lowest admission rate of 8 ± 1.13 percent — only one in every 12.5 applicants was successful (2012-2015). The corresponding admission rates for UP Manila, UP Los Baños, and UP Baguio were: 11.01 ± 1.8, 39.14 ± 4.98, and 74.56 ± 8.34 percent, respectively. The admission rate for the entire UP System

was 16.67 ± 0.7 percent. In 2016, UP Baguio admitted 5.57 times more students than the number of applicants who listed it as their first preference.

YEAR	UP (%)	UP DILIMAN (%)	UP LOS BAÑOS (%)	UP MANILA (%)	UP BAGUIO (%)
2012	17.06	7.88	43.23	13.59	83.98
2013	16.61	7.66	42.59	10.9	76.73
2014	15.72	6.88	38.32	9.96	63.86
2015	17.3	9.56	32.42	9.6	73.66
2016	30.88	19.27	23.57	68.14	557.14

■ **Table 1.** Admission rates (%) of UP, UP Diliman, UP Los Baños, UP Manila, and UP Baguio

Undergraduate Graduation Rates and Latin Honors

Table 2 lists the number of bachelor's graduates produced by UP Diliman together with those who finished with Latin honors from AY 2010-2011 to AY 2024-2025 (period: 15 years). It produced 3,314 ± 496 graduates per year while admitting 3,939 ± 1,469 new students per year indicating a graduation success rate of 84.13 percent. From AY 2010-2011 to AY 2020-2021, 34.41% of UP Diliman graduates (34,360) graduated with Latin honors with a *summa-to-magna-to-cum laude* graduate ratio of 1:12.88:31.42. In AY 2022-2023 and AY 2023-2024, the percentage rose noticeably to 66.78 (1:3.92:2.43) and 62.03 (1: 3.88:2.74) percent, respectively.

ACADEMIC YEAR	BACHELOR'S GRADUATES (UP DILIMAN)	SUMMA CUM LAUDE	MAGNA CUM LAUDE	CUM LAUDE
2010-2011	3,208	21	216	785
2011-2012	3,138	19	222	862
2012-2013	3,446	15	218	813
2013-2014	3,380	20	248	792
2014-2015	3,499	29	250	921
2015-2016	3,580	30	325	936
2016-2017	3,666	36	337	1,016
2017-2018	3,570	29	402	1,004
2018-2019	3,981	55	1,058	1,173
2019-2020	2,892	28	302	683
2020-2021	2,099	29	199	456
2021-2022	2,516	147	652	634
2022-2023	3,359	305	1,196	742
2023-2024	3,511	286	1,109	783
2024-2025	3,876	241	1,143	985

■ **Table 2.** From AY 2010-2011 to AY 2024-2025 (15 years) 43.75 percent of UP Diliman undergraduate students graduated with Latin honors (1:6.1:9.15). In AY 2010-2011, AY 2023-2024 and AY 2024-2025, the percentages were: 31.86 (1:10.29:37.38), 62 (1:3.88:2.74) and 61.11 (1:4.74:4.09), respectively.

Table 3 lists the number of bachelor's graduates from UP Los Baños together with those who graduated with honors from AY 2010-2011 to AY 2024-2025. The CU produced an average of 1,680.93 ± 395.53 graduates per year. From AY 2010-2011 to AY 2020-2021, 9.03 percent of the graduates (18,344) finished with Latin honors at a ratio of 1:22.88:183.45. In AY 2022-2023 and AY 2023-2024, the share jumped to 37.94 (1:13.32:19) and 55.04 (1: 5.61:23.18) percent, respectively.

ACADEMIC YEAR	BACHELOR'S GRADUATES (UP LOS BAÑOS)	SUMMA CUM LAUDE	MAGNA CUM LAUDE	CUM LAUDE
2010-2011	1,489	2	18	132
2011-2012	1,500	1	9	118
2012-2013	1,481	1	15	115
2013-2014	1,699	1	19	134
2014-2015	1,864	0	14	150
2015-2016	1,966	0	20	157
2016-2017	2,131	1	20	161
2017-2018	2,061	1	35	224
2018-2019	2,061	1	20	179
2019-2020	1,301	0	10	72
2020-2021	791	0	3	23
2021-2022	1,233	9	176	345
2022-2023	1,932	22	293	418
2023-2024	2,024	28	437	649
2024-2025	2,343	36	413	810

■ **Table 3.** From AY 2010-2011 to AY 2024-2025, 20.45 percent of UP Los Baños students (25,876) graduated with honors (1:14.58:35.8). In AY 2010-2011, AY 2023-2024, and AY 2024-2025, the percentage were: 10.2 (1:9:66), 55 (1:15.61:23.18), and 57.73 (1:11.47:22.5), respectively.

Table 4 lists the number of bachelor's graduates produced by UP Manila from AY 2010-2011 to AY 2023-2024 (Total: 12,685) showing rate of 906.07 ± 231.53 graduates per year. From AY 2010-2011 to AY 2020-2021, 21.92 percent graduated with Latin honors (1:29.67:192.56). In AY 2022-2023 and AY 2023-2024, the share more than doubled to 53.51 (1:14.65:20.9) and 52.44 (1:15.25:19.15) percent, respectively.

ACADEMIC YEAR	BACHELOR'S GRADUATES (UP MANILA)	SUMMA CUM LAUDE	MAGNA CUM LAUDE	CUM LAUDE
2010-2011	829	1	21	137
2011-2012	916	1	14	140
2012-2013	905	1	16	144
2013-2014	858	1	22	148
2014-2015	822	3	34	192
2015-2016	936	1	23	186
2016-2017	991	0	36	212
2017-2018	856	0	39	193
2018-2019	897	1	31	200
2019-2020	710	0	15	93
2020-2021	444	0	16	88
2021-2022	805	10	151	311
2022-2023	1,366	20	293	419
2023-2024	1,350	20	305	383
2024-2025	1,264	10	150	318

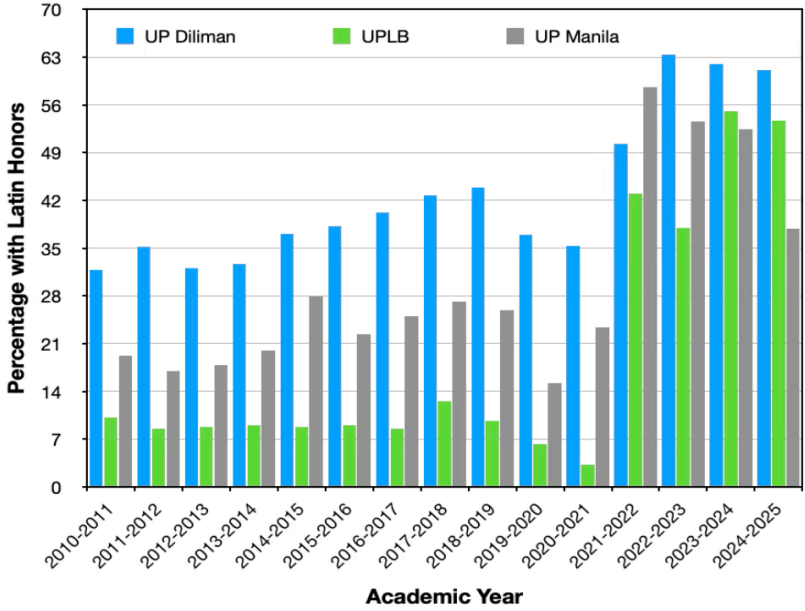
■ **Table 4.** From AY 2010-2011 to AY 2024-2025, 31.53 percent of UP Manila students graduated with Latin honors (1:16.9:45.84). In 2010-2011, AY 2023-2024 and AY 2024-2025, the percentages were: 19.18 (1:21:137), 52.44 (1:15.25:19.15), and 37.81 (1:15:31.8), respectively.

Figure 2 plots the percentage of bachelor's graduates finishing with Latin honors in UP Diliman, UP Los Baños, UP Manila and UP Baguio from AY 2010-2011 to AY 2023-2024. The percentage of Latin honor graduates in UP Diliman increased at a rate of +1.985 percent per year. A similar trend is observed for UP Manila (+2.58%) and UP Los Baños (+2.56%). A minimum percentage value is observable in AY 2019-2020 which is four years after the first transition year of AY 2016-2017.

Interest to study in UP continues to grow making undergraduate admission increasingly competitive particularly in UP Diliman — the preferred destination

of 64.97 ± 9.02 percent of UPCAT applicants from 2003 to 2023 excluding the numbers in the K-12 transition years 2016 and 2017. In contrast, the corresponding annual admission rates decreased at -0.145% and -2.15% for UP and UP Diliman, respectively.

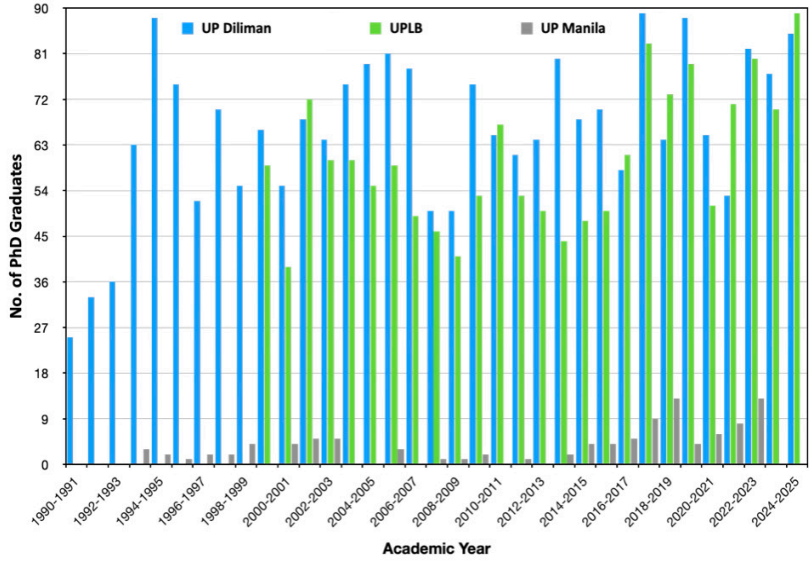
Figure 2 shows that an increasing number of students graduated with Latin honors from AY 2010-2011 to AY 2023-2024. Of the 34,752 bachelor's graduates of UP Diliman from AY 2010-2011 to AY 2020-2021, 37.17% finished with Latin honors. The percentage increased steadily at 1.54% per year from AY 2010-2011 to AY 2018-2019. It declined in the first two years of the COVID-19 pandemic (-37% in AY 2019-2020 and -35.29% in AY 2020-2021) but recovered drastically to +63.32% in AY 2021-2022. The average percentage in the last three years ending AY 2021-2022 is 45.21 ± 15.71 percent which is only 1.37% higher than that (43.84%) in AY 2018-2019.



■ **Figure 2.** Percentage of Latin honor awarded in UP Diliman increased at +2.1 percent per year. Similar percentage trend is observed for UP Manila (+3) and UP Los Baños (+2.3). A percentage dip happened in AY 2019-2020 – four years after the first transition year AY 2016-2017.

PhD Graduation Rates of UP Diliman, UP Los Baños and UP Manila

Figure 3 plots the number of PhD graduates produced by UP Diliman from AY 1990-1991 to AY 2024-2025 (35 academic years), UP Los Baños from AY 1999-2000 to AY 2024-2025 (25 years), and UP Manila from AY 1993-1994 to AY 2022-2023 (30 years). The numbers consider graduates of all doctoral programs except those from the College of Law (UP Diliman), College of Medicine and College of Dentistry (UP Manila), and College of Veterinary Medicine (UP Los Baños). UP Diliman, UP Los Baños, and UP Manila produced an average of 65.91 ± 15.49, 60.08 ± 13.62, and 3.47 ± 3.5 PhD graduates per year, respectively.



■ **Figure 3.** PhD graduates per year in: UP Diliman (65.91 ± 15.49; sampling period: 35 years), UP Los Baños (60.08 ± 13.62; 26 years), and UP Manila (3.47 ± 3.5; 30 years). From 2010 to 2025 (15 years), UP Diliman admitted a total of 3,594 new PhD students and produced 910 PhD graduates (graduation ratio: 29.8%). From 2007 to 2025, UP Los Baños (UP Manila) admitted 105.67 ± 29.41 (21.56 ± 10.63) new PhD students and graduating 59.28 ± 16.1 (5.78 ± 4.92) per year, for a success rate of 56.1 (24.53) percent. Number of doctoral programs in 2025: 70 (UP Diliman), 33 (UP Los Baños), and 11 (UP Manila).

The number of PhD graduates produced annually is relatively low and is characterized by strong year-to-year fluctuations (UP Diliman: ±23.5%; UP Los

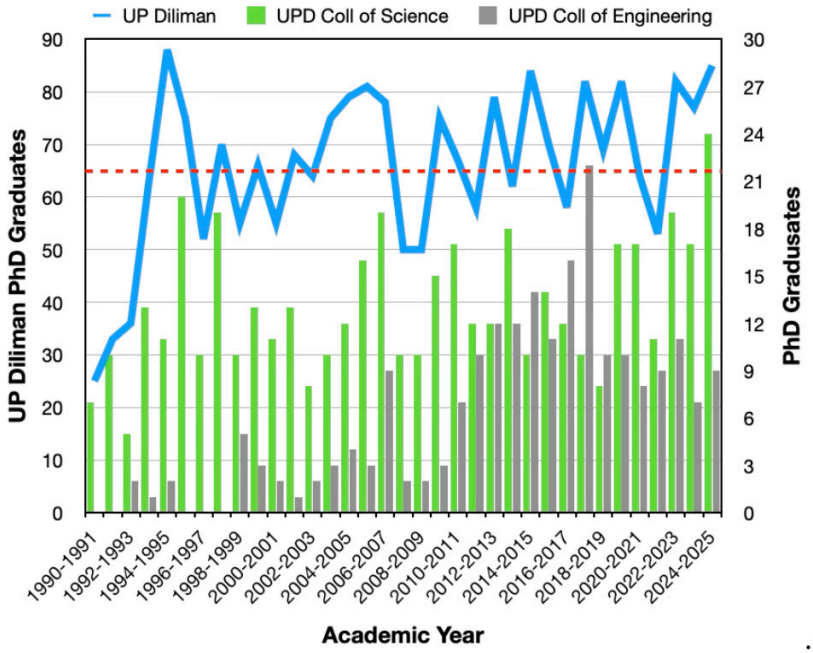
Baños: ±22.67%; UP Manila: ±100%). There is no apparent tendency to improve or stabilize despite escalated allocation of resources by UP to hire, retain and promote more PhD faculty, and to establish new research laboratories as well as PhD degree programs. A constant stream of incoming PhD students graduating on time (five or three years according to their program of study), would produce a relatively flat graduation profile in time (sampling period: AY 1990-1991 ≤ time (in one-year units) ≤ AY 2021-2022) with weak temporal variations caused by unforeseen medical leaves, academic disqualifications, a Black Swan event such as the COVID-19 pandemic, and relatively small variations in the number of new students.

Between AY 2000-2001 and AY 2022-2023 (23 years), 36.35% and 99.4% of PhD graduates were awarded with STEM degrees in UP Diliman and UP Los Baños, respectively. The STEM PhD graduates of UP Diliman studied in the College of Science (CS), College of Engineering (CoE), College of Social Sciences and Philosophy (CSSP), School of Statistics (SoS), School of Archaeology (SoA), and the College of Home Economics (CHE). UP Diliman produced less than one (0.93 ± 0.22) PhD graduate per degree per year from AY 2000-2001 to AY 2024-2025. UP Los Baños achieved a higher ratio of 1.64 ± 0.43 PhD graduates per STEM degree per year because it offered a fewer number of PhD degree programs.

The number of regular PhD faculty members in UP Diliman grew from 471 in January 2013, to 498 (+5.73%) in December 2015, then to 608 (+28.88%) in February 2020. UP Los Baños employed 226 STEM PhD faculty members in AY 2011-2012, and 313 in AY 2022-2023. UP Diliman offered a total of 55 PhD degree programs in August 2024 – the number is 105 when the different tracks towards getting the degree are counted separately. Each program was endorsed separately by the UP Diliman University Council for approval by the UP Board of Regents. For example, the PhD degree in Industrial Engineering may be obtained via one of the following tracks: Straight MS-PhD, Regular PhD, or PhD by Research.

PhD and MS Graduation Rates of UP Diliman, College of Science, College of Engineering and the National Institute of Physics

Figure 4 compares the PhD graduate production rates of UP Diliman, CS, and the CoE from AY 1990-1991 to AY 2023-2024 (34 years). The three produced an average of 65.35 ± 15.35, 12.82 ± 3.88, and 5.97 ± 5.45 PhD graduates per year, respectively. The two colleges accounted for 28.75% of the UP Diliman output which reached a maximum of 89 in AY 2017-2018. From AY 2000-2001 to AY 2023-2024 (24 years) the number of PhD graduates in UPD, CS, and the CoE increased at rate of 0.3, 0.15, and 0.49 per year, respectively.



■ **Figure 4.** PhD graduates of UP Diliman (Total: 2,307; 65.91 ± 15.48 per year in red line), College of Science (460; 13.14 ± 4.26), and the College of Engineering (212; 6.06 ± 5.4) from AY 1990-1991 to AY 2024-2025 (35 years). From AY 2000-2001 to AY 2024-2025, UP Diliman, CS, and the CoE graduates increased at rate of 0.41, 0.23, and 0.44 per year, respectively. They produced 53.92%, 55.87%, and 82.55% of their total outputs in the last 18 years of the 35-year sampling period. Number of PhD programs in 2025: 70 (UP Diliman), 11 (CS), and 12 (CoE).

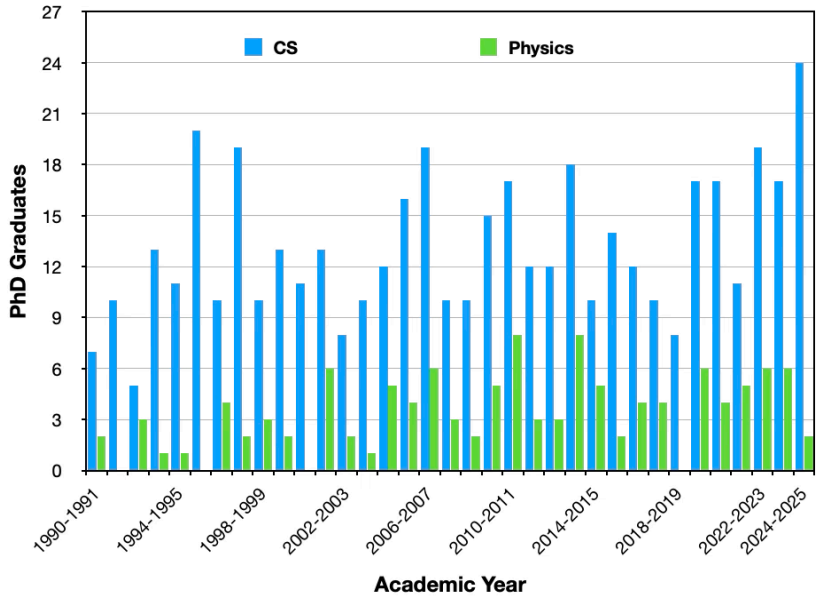
UP Diliman graduated 56.3 ± 20.1, 67.5 ± 12.1, and 70.7 ± 11.09 PhDs per year in the following ten-year periods: AY 1990-1991 to AY 1999-2000, AY 2000-2001 to AY 2009-2010, and AY 2010-2011 to AY 2019-2020. The figures indicate increasing decadal averages with decreasing standard deviation values implying improving stability (but still greater than 10%) in the annual yields. UP Diliman produced 69.25 ± 12.97 PhD graduates in AY 2020-2021 and 2023-2024 (four years). CS graduated 11.8 ± 4.73, 12.4 ± 3.37, and 13 ± 3.4 PhDs per year in the ten-year periods from AY 1990-1991 to AY 1999-2000, AY 2000-2001 to AY 2009-2010, and AY 2010-2011 to AY 2019-2020, respectively. CS produced 16 ± 3.46 graduates from AY 2020-2021 and 2023-2024. The highest CS outputs are 24 and 20 that were achieved in AY 2024-2025 and AY 1995-1996, respectively.

CoE graduated 1.3 ± 1.7, 3.1 ± 2.23, and 12.4 ± 4.17 PhDs per year from AY 1990-1991 to AY 1999-2000, AY 2000-2001 to AY 2009-2010, and AY 2010-2011 to AY 2019-2020, respectively. Highest production was at 22 achieved in AY 2017-2018. CoE produced 8.75 ± 1.71 graduates in AY 2020-2021 and 2023-2024. UP Diliman, CS, and the CoE produced 52.16%, 52.52%, and 86.21% of their PhD graduates in the last 17 years of the 34-year sampling period. Production has palpably benefited from the availability of additional PhD scholarships through the Engineering Research and Development for Technology Program (ERDT) of the Department of Science and Technology (DOST). The impact of the Advanced Science and Technology Human Resource Development program (ASTHRDP) on the CS PhD production is not apparent. The ASTHRDP is the counterpart program of the DOST for the basic and the natural sciences and mathematics. Both initiatives were first introduced in 2006.

The number of regular PhD faculty members in UP Diliman grew from 471 in January 2013, to 498 (+5.73%) in December 2015, and then to 607 (+28.88%) in February 2020. On the other hand, those affiliated directly with CS rose from 150 in June 2012 to 168 (+11.33%) in July 2018 and to 211 (+40.67%) in September 2024. The number for CoE increased from 66 in June 2012 to 97 (+46.97%) in July 2018 and then to 110 (+66.67%) in 2022. The following were the number of PhD faculty members in the eight CUs of UP on 31 December 2021: UP Diliman (406, 40.76 percent of total), UP Los Baños (323, 32.43%), UP Manila (69, 6.9%), UP Visayas (68, 6.83%), UP Baguio (44, 4.42%), UP Mindanao (36, 3.61%), UP Cebu (34, 3.41%), and the UP Open University (14, 1.4%). Two PhD faculty were affiliated directly with the Office of the UP President.

In the first semester of AY 2024-2025, UP Diliman, CS, and the CoE offered a total of 55 (105 if their different tracks are counted separately), 11 (21) and 11 (18) doctoral degree programs, respectively. The figures imply a yearly output of 1.19 ± 0.28, 1.16 ± 0.35, and 0.5427 ± 0.5 PhD graduate per degree for UP Diliman, CS and the CoE. The number of PhD programs in UP Diliman has increased since AY 1990-1991 while that of CS remained stable at 10 until the start of AY 2022-2023 when the PhD Data Science program was implemented.

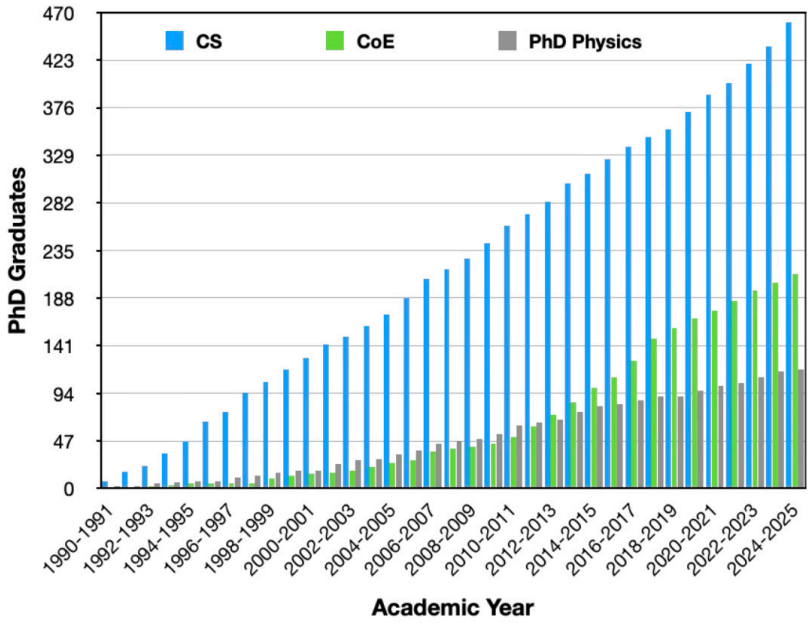
Figure 5 compares the PhD graduate production of CS (12.82 ± 3.88 per year) and the National Institute of Physics (NIP) from AY 1990-1991 to AY 2023-2024. The CS and the NIP graduation increases at rate of 0.12 and 0.18 PhD graduates per year, respectively. The NIP produced a total of 116 graduates at a yearly average of 3.41 ± 2.23. PhD Physics graduates account for 26.6% of the total CS production. CS offers eleven PhD degree programs in AY 2024-2025 with NIP employing 13.74% of the entire CS PhD faculty.



■ **Figure 5.** PhD graduate production of CS (Total: 460; 13.4 ± 4.26) and the National Institute of Physics (118; 3.37 ± 2.21) from AY 1990-1991 to AY 2024-2025. CS and the NIP PhD graduation rates increase 0.17 and 0.1 per year, respectively. PhD Physics graduates account for 25.7% of CS production.

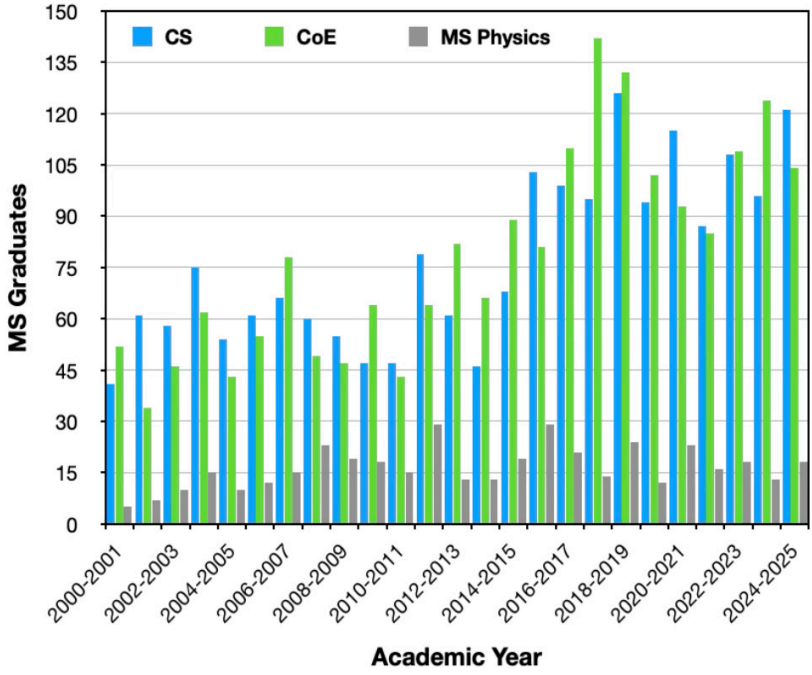
The PhD Physics program was first offered in 1983 when the then Department of Physics became the NIP. At present, NIP is the only degree-granting unit in UP that requires the successful mentoring of a PhD student in the grant of a permanent faculty appointment. To be recommended by the NIP Executive Council, a temporary PhD faculty must demonstrate his or her ability to supervise single-handedly the dissertation research of a PhD (Physics) student. The NIP Graduate Committee only permits the holding of a dissertation defense if the concerned student can show proof that his or her dissertation research findings are already accepted for publication in a peer-reviewed journal (with a journal impact factor) that is indexed in Clarivate's Web of Science. The two complementary policies which were first practiced in the early 2000s, have led to decisions on tenure and PhD student graduation that were transparent, consistent, and collegial to the NIP academic community.

Figure 6 reveals that the CoE PhD graduation output markedly improved beginning in AY 2010-2011 – four years after the first implementation of the Engineering Research and Development for Technology Program (ERDT) of the DOST. Recipients of ERDT PhD and MS scholarships could study full-time with available financial support for their dissertation and thesis research. On the other hand, CS PhD graduate productivity is yet to show the impact of the Advanced Science and Technology Human Resource Development Program (ASTHRDP) – the DOST counterpart for the natural and applied sciences. The ASTHRDP and the ERDT were first implemented in 2006 [Saloma 2019].



■ **Figure 6.** Running sum of PhD graduates in CS (Total: 460; 13.14 ± 4.26 per year), CoE (212; 6.06 ± 5.4), and NIP (118; 3.37 ± 2.21) from AY 1990-1991 to AY 2024-2025 (25 years). CoE graduation rate started to improve in AY 2010-2011.

Figure 7 compares the MS graduate production of CS (Total: 1802; 75.1 ± 24.36 per year), CoE (1852; 77.17 ± 30.43), and the MS Physics Program of NIP (393; 16.38 ± 6.21) from AY 2000-2001 to AY 2023-2024. The CS, CoE, and the NIP graduation rates are increasing at rates of 2.62, 3.52, and 0.38 per year, respectively. MS Physics graduates account for 21.8 percent of the total CS production.



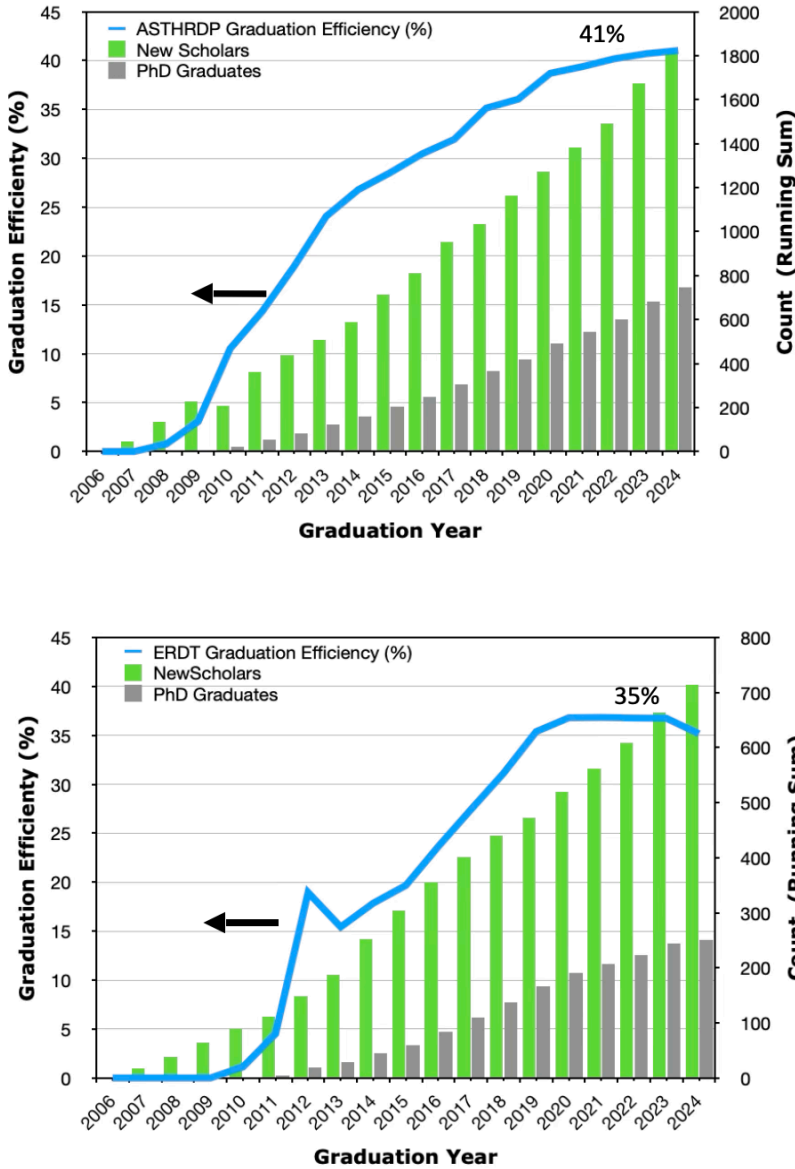
■ **Figure 7.** MS graduates of CS (Total: 1,923; 76.92 ± 25.22 per year), College of Engineering (1,956; 78.24 ± 30.27), and the National Institute of Physics (411; 16.44 ± 6.09) from AY 2000-2001 to AY 2024-2025 (25 years). CS, CoE, and the NIP profiles are increasing at 2.74, 3.36, and 0.35 graduates per year, respectively. MS Physics graduates account for 21.37 percent of CS production.

Table 5 compares the STEM PhD to Master's Graduation Ratio of UP Diliman, UP Los Baños, UP Manila, CoE, CS, and NIP from AY 2000-2021 to AY 2022-2023 (23 years). The NIP offers two undergraduate degree programs: BS Applied Physics (21.5± 8.043 graduates per year) and BS Physics (15.5± 8.16). At present, it does not have counterpart programs in PhD and MS Applied Physics. Among the three CUs, UP Los Baños has the highest PhD to bachelor's graduation ratio of 1:3.16:26.81.

UNIT	STEM PHD: M:B GRADUATION RATIO
UP Diliman	1:5.43:904.6
UP Los Baños	1:3.16:26.81
UP Manila	1:38.7:1,927.7
CoE	1:9.74
CS	1:5.67
NIP	1:4.02:37 (BS)

■ **Table 5.** STEM PhD to Master's (M) to Bachelor's (B) Graduation Ratio of UP Diliman, UP Los Baños, UP Manila, College of Engineering (CoE), College of Science (CS), and the National Institute of Physics (NIP). Period: AY 2000-2001 to AY 2022-2023 (23 years).

A total of 1,823 ASTHRDP and 714 ERDT PhD scholarships were awarded over a period of 16 years from 2006 to 2024 (see Figure 8). More than fifty percent (57.73%) of the ASTHRDP scholars studied in UP Diliman, UP Los Baños, UP Manila, and UP Visayas; and 44.48% of the ERDT scholars enrolled in UP Diliman and UP Los Baños. The rest studied in other ASTHRDP [Ateneo de Manila University (ADMU), Central Luzon State University (CLSU), De La Salle University (DLSU), Mindanao State University-Iligan Institute of Technology (MSU-IIT), University of Santo Tomas (UST), Visayas State University, University of San Carlos (USC)] and ERDT (ADMU, CLSU, DLSU, MSU-IIT, USC, Mapúa University) partner institutions. For PhD scholars awarded from 2006 to 2024 the graduation efficiency approached towards a subpar 41% for the ASTHRDP (total: 748 graduates) and 35.2% for the ERDT (251 graduates).



■ **Figure 8.** Running sum of ASTHRDP (top) and ERDT (bottom) PhD scholars and graduates from 2006 to 2024. Also plotted are the corresponding graduation efficiencies [100 (no. of graduates/no. of scholars)]. Efficiency converges towards 41% for the ASTHRDP (total: 748 graduates) and 35% for the ERDT (251 graduates). For UP Diliman ASTHRDP and ERDT scholars, the efficiency is at 14.15% and 36.27%, respectively.

Key Findings

The information in Section III leads to the following key findings:

1. UP consistently attracts the best high school graduates of the country. From 2003 to 2023, UP and UP Diliman applications increased at rates of +2,206.6 and +1,614 per year respectively, minus the figures for 2016 and 2017. UP Diliman was the preference of 62.56 ± 0.045 percent of all UPCAT applicants.

2. Admission to UP is getting more difficult. Yearly admission rates (2003 -2023) to UP and UP Diliman were 17.07 ± 1.72 and 8.51 ± 1.71 percent when 2016 (30.88%; 19.27%) and 2017 (28.99%; 18.39%) are included. Absorption declined at a yearly rate of -0.1732% (UP) and -0.18% (UP Diliman) since the rise in UPCAT applications was not matched by a proportionate increase in admission slots. More and more talented young Filipinos are denied with the life-changing opportunity to learn from the most creative and productive teachers, artists, scientists, and researchers in the country (Saloma 2021). Those from the Visayas and Mindanao are particularly underrepresented in the undergraduate population.

3. Number of bachelor's graduates with Latin honors grew in UP Diliman (at an average rate +2.1% per year), UP Los Baños (+2.3%), and UP Manila (+3%) from AY 2010-2011 to AY 2024-2025. It is due to increasing competitiveness in admission and not by deliberate relaxation of academic standards. CUs with higher admission rates have lower percentages of students graduating with Latin honors.

4. The PhD graduation rates of UP Diliman (65.35 ± 15.35 per year; 36.35% in STEM programs), UP Los Baños (58.92 ± 15.35; 99.4%), and UP Manila (3.47 ± 3.5) have remained low and unstable even though the number of regular UP Diliman PhD faculty members increased from 471 in January 2013, to 498 (+5.73%) in December 2015, then to 607 (+28.88%) in February 2020. UP Diliman offered a total of 70 PhD degree programs in August 2025. UP Los Baños employed 226 STEM PhD faculty in AY 2011-2012, which increased to 313 (+38.5%) in 2023. It offered thirty-

six (36) STEM PhD programs in 2025. The basic monthly salary of a full professor (Salary Grade 29-8) rose 102.33% from January 2016 to January 2024 (₱194,463).

5. From 2010 to 2025, UP Diliman admitted a yearly average of 239.6 ± 33.41 new PhD students (31.14% in the CS and CoE) while producing only 71.47 ± 10.82 (33.93% from CS and CoE). Sustained student interest in the PhD programs is not matched by a reasonable likelihood of graduation which is only at 29.03 ± 1.05 percent. From 2007 to 2023, UP Los Baños (UP Manila) admitted 105.67 ± 29.41 (23.56 ± 10.63) new PhD students and produced 59.28 ± 16.1 (5.78 ± 4.92) PhD graduates per year, for success rate of 56.1 (24.53) percent.

6. From 2010 to 2025, UP Diliman produced a total of 49,721 bachelor's graduates (3,314.73 ± 496.49 per year) while admitting 59,085 new students indicating an efficiency rate of 84.15 percent. Only a fraction of the bachelor's graduates proceeds to enroll in the PhD degree programs.

7. Frequency analysis of the PhD graduation profile of UP Diliman reveals that those who graduated took an average of 8.5 academic years to finish. A straight STEM PhD curriculum is designed for completion within five years for qualified students with the requisite bachelor's degree. For students who already have the requisite MS degree their PhD curriculum is designed for completion within three years. It was reported earlier that the 835 PhD graduates of UP Diliman between AY 2003-2004 and AY 2014-2015 (12 years) spent an average of 7.88 ± 1.57 years in their respective programs (Saloma 2016).

8. Over a 34-year period ending in AY 2024-2025, the CS and CoE produced 12.82 ± 3.88 and 6.06 ± 5.4 PhD graduates per year, respectively. Their total accounted for 29.19% of the UP Diliman output. From AY 2000-2001 to AY 2023-2024 (24 years) the graduation rates in UPD, CS, and the CoE increased at a measly 0.3, 0.15, and 0.49 PhD graduate per year respectively, even though the number of CS PhD faculty grew from 150 in June 2012 to 168 (+11.33%) in July 2018 and to 211 (+40.67%) in September 2024 while that of CoE rose from 66 in June 2012 to 97 (+46.97%) in July 2018 and then to 110 (+66.67%) in 2022. The CoE PhD graduation output

improved markedly with the implementation of the DOST ERDT in 2006. The same could not be said of the DOST ASTHRDP scholars in CS.

9. PhD Physics graduates (118 at 3.37 ± 2.21 per year) made up 27% of the total CS production (436) from AY 1990-1991 to AY 2023-2024. Graduation increased at measly rates of 0.12 (CS) and 0.18 (NIP) per year. The NIP employed 13.74% of the entire CS PhD faculty. The other ten programs produced less than one (0.93 ± 0.35) graduate per program per year. CS has not produced a PhD Geology graduate since AY 1999-2000.

10. The PhD: Master's (M): Bachelor's (B) graduation ratios of UP Diliman (1 PhD:5.43 M:904.6 B), UP Los Baños (1:3.11:26.82), UP Manila (1: 38.7:1,927.7), CoE (1:9.74), and CS (1:5.67) to reveal that a significant percentage of the master's graduates did not get a PhD degree. Still a much larger percentage of bachelor's graduates did not obtain a master's degree – one (1) order of magnitude more for UP Los Baños, two (2) for UP Diliman and three (3) for UP Manila. The PhD: MS: BS graduation ratio of NIP is 1:4.02:37. Many BS Applied Physics graduates are not proceeding to the MS Physics program because the NIP does not offer an PhD/MS degree program in Applied Physics.

11. Underperformance of the STEM PhD programs of UP has affected the success of the ASTHRDP and the ERDT advanced manpower development programs. Since 2006, 57.73% of all ASTHRDP PhD scholars studied in UP Diliman, UP Los Baños, UP Manila, and UP Visayas, while 44.48% of ERDT scholars were in UP Diliman and UP Los Baños. As of 2023 the running PhD graduation efficiency had settled to the subpar values of 39.92% for the ASTHRDP and 36.97% for the ERDT. Less than four out of every ten ASTHRDP or ERDT scholars were able to graduate since 2006.

Recommendations

The financial incentives (e.g., International Publication Awards, One UP Professorial Chairs, Balik PhD Program) and faculty merit recognition system that were adapted in the last 35 years did not impact significantly on the production of PhD graduates and the following actions are recommended to increase the number of PhD faculty mentors and to incentivize successful mentoring of PhD students:

1. Require for graduation the successful defense of an individual undergraduate thesis in all STEM undergraduate programs. It will provide undergraduates with the opportunity to join research groups early and learn the proper conduct of meaningful scientific research – from attending weekly research meetings and presenting technical seminars and research progress reports, to delivering their first conference presentation to an audience of peers and experts and defending their thesis research findings to an examination panel. The training of a successful PhD student start in his/her undergraduate years.

2. Enlarge the talent pool of potential Filipino scientists and researchers by increasing the number of admission slots per year in proportion to the number of UPCAT applications. Strengthen the capability of STEM undergraduate programs in CUs other than UP Diliman. In 2012, 2014, and 2015, 56.9 ± 2.18% of UP Diliman qualifiers were residents of the NCR where only 12.4% of the PH population lived in 2020. The NCR accounted for 31.93 ± 0.16% to the annual Philippine gross domestic product from 2018 to 2020. Admitting more UPCAT applicants will slow down the rising economic inequality in Philippine geographic population (Saloma 2021).

3. Adapt in a calibrated manner the tenure policy of NIP to other UP units that offer STEM PhD programs. It resulted in PhD Physics graduates accounting for 26.6% of the total CS output from AY 1990-1991 to AY 2023-2024 (34 years). The minimum mentoring requirement for tenure in selected UP units is the graduation of an MS student with the tenure-candidate serving as thesis research supervisor. Raise the bar to one PhD graduate as sole dissertation supervisor.

4. Require the graduation of at least one PhD student as sole dissertation supervisor in the promotion of a tenured PhD faculty to the rank of full professor. CS produced only 12.82 ± 3.88 PhD graduates per year in the last 34 years ending AY 2023-2024, even though the CS PhD faculty complement grew from 150 in June 2012 to 211 (+40.67%) in September 2024. If one CS PhD faculty can produce one PhD graduate in every five (5) years, then on average the number of PhD graduates will increase to 42 per year (+229%).

5. Require candidates for the title of professor emeritus (PE) to graduate at least six (6) PhD students as sole dissertation research supervisor. Professor emeriti are a benchmark of exemplary achievement in teaching, scientific research, and academic mentoring. A total of 202 emeriti (8.1 ± 6.8 per year) were appointed from 2000 to 2024 with 65.84% of them made after 2011. Recipients from UP Diliman (49%), UP Los Baños (21.3%), and UP Manila (22.3%) accounted for 92.6% of total. To qualify for PE appointment a retired faculty must have rendered at least 20 years of active service to UP [2003 UP Diliman Faculty Manual, Sec 8.5.3]. The proposal will result in the graduation of at least one PhD student per 3.3 academic years on average when the PE candidate only satisfies the minimum service requirement. For a longer duration of service (e.g., 30 years), it will be one PhD graduate per five (5) years.

6. Formulate a transparent, efficient and collegial process of discontinuing unproductive PhD programs. At present a program is abolished only when the concerned unit requests for it and often with the aim of replacing it with a new one. This is hindering the efficient streamlining of existing PhD programs for the purpose of re-allocating limited resources for better utilization. Each CU shall conduct a regular evaluation of the graduation performance of PhD programs with implications on faculty merit promotion and future appointment as professor emeritus.

7. Direct the NIP and CS to develop a PhD/MS degree program in Applied Physics which is long overdue. The BS Applied Physics program with concentrations in Instrumentation Physics and Materials Science was first implemented forty years ago in AY 1983-1984. By the end of AY 2023-2024,

it already produced a total of 649 BS Applied Physics graduates which is 19% more than the number of BS Physics graduates. Applied physicists at NIP are the country pioneers in data analytics, information and data processing, complex systems analysis, and artificial intelligence.

8. Avoid assigning non-tenured PhD faculty members to administrative positions that uproots them away from their home units. Their energies are best spent directing and supervising the dissertation and thesis research of student-advisees. If unavoidable then assign them to administrative chores that directly affect the successful implementation of undergraduate and graduate programs in their home units.

9. Allow capable PEs to serve as sole PhD dissertation research supervisors until the age of 70, if their time-bound appointments are duly endorsed by the concerned Graduate Committee and approved by the College Dean. At present PEs can only serve as dissertation co-supervisors.

Increasing the PhD graduation rate to approach that of bachelor's graduation and in proportion to the number of regular PhD faculty members will enable UP to accomplish its stated purpose as the national university. It will boost its track record as a highly capable research institution and fulfill a core and unique public service function which is the authority to grant PhD degrees to qualified students.

UP needs to entice more of its undergraduate students and prepare them for a productive life in graduate school. Young STEM talents want to collaborate with competent and committed PhD supervisors. Their success means more research problems being examined and solved thereby enhancing our own capability to address complex national challenges from rising income inequality and widespread poverty, dwindling natural resources, increasing population pressure, food and energy insecurity, inadequate health care system, natural calamities and crippling government red tape. New scientific knowledge is empowering. It is the fuel that drives the technological innovation engine.

Having more ASTHRDP, ERDT, CHED, and other government scholars succeeding in their mission to graduate implies more of them being spared from the debilitating stigma of failure and the heavy burden of reimbursing the government of the cost of their academic training. The best practices that UP will constantly develop, validate and refine through time can be shared with other HEIs to improve their own advanced manpower development programs.

The recommendations if adapted will be implemented in a deliberate prospective manner that considers the existing faculty demographics and administrative culture of the concerned academic units.

References

Commission On Higher Education (CHED) 2023. https://ched.gov.ph/wp-content/uploads/Higher-Education-Data-and-Indicators-AY-2009-10-to-AY-2019-20.pdf. Retrieved 6 February 2023.

Department Of Budget And Management (DBM) 2020. https://www.dbm.gov.ph/images/pdffiles/2020-Peoples-Proposed-Budget.pdf. Retrieved 6 February 2023.

DBM 2021. https://www.dbm.gov.ph/wp-content/uploads/NEP2021/SUCS/General-Summary-2021.pdf. Retrieved 6 February 2023.

DBM 2022. https://www.dbm.gov.ph/wp-content/uploads/NEP2022/Introduction.pdf. Retrieved 6 February 2023.

Official Gazette, Republic of the Philippines 2008. https://www.officialgazette.gov.ph/2008/04/19/republic-act-no-9500. Retrieved 6 February 2023.

Official Gazette, Republic of the Philippines 2017. https://www.officialgazette.gov.ph/2017/08/03/republic-act-no-10931. Retrieved 7 February 2023.

Philippine Statistics Authority (PSA) 2021. https://psa.gov.ph/content/2020-census-population-and-housing-2020-cph-population-counts-declared-official-president. Retrieved 8 February 2023.

Office for the Advancement of Teaching (OAT), UP Diliman 2005. https://oat.upd.edu.ph/post/faculty-manual-update-january-2005. Retrieved 10 February 2023.

Office of the Secretary of the University (OSU) 2003. https://osu.up.edu.ph/wp-content/uploads/2014/05/UPD_Faculty_Manual.pdf. Retrieved 10 February 2023.

OSU 2012. https://osu.up.edu.ph/wp-content/uploads/2015/09/2012-Code-of-Student-Conduct.pdf. Retrieved 10 February 2023.

Office of the UP President (OP 2020). UP System Policy on the Second Semester AY 2019-2020 in the Time of COVID-19: Implementing Guidelines. https://up.edu.ph/wp-content/uploads/2020/04/Implementing-Guidelines-to-the-UP-System-Policy-on-the-Second-Semester-AY-2019-2020-in-the-Time-of-COVID-19.pdf. Retrieved 14 February 2023.

OVPAA 2022. Memorandum No. OVPAA 2022-112 dated 30 July 2023. https://hrdo.upm.edu.ph/node/434. Retrieved 26 February 2023.

Saloma C.A. 2016. Measuring the Performance of the Philippine Scientific Enterprise System. Public Policy Vol. XV No. 2: 123–161. Available online: https://cids.up.edu.ph/wp-content/uploads/2022/03/Measuring-the-Performance-of-the-Philippine-Scientific-Enterprise-System-vol.15-no.2-2016-2.pdf.

Saloma C.A. 2019. Production of STEM PhD Graduates: First decade of the ASTHRD and ERDT Programs. Trans Natl Acad Sci & Tech Philipp Vol. 40 (2): 380–389. https://transactions.nast.ph/wp-content/uploads/2022/04/2019-Plenary-Paper-Saloma-CA.pdf

Saloma C.A. 2021. The University of the Philippines and Economic Inequality in PH. Philipp J Sci Vol 150 No. 4: vii-ix. https://philjournalsci.dost.gov.ph/images/pdf/pjs_pdf/vol150no4/EDITORIAL_FinalCopy.pdf

University of the Philippines (UP). 2022. http://www.up.edu.ph/about-up/university-history. Retrieved 6 February 2023.

University of the Philippines (UP) Diliman Faculty Manual. 2003. Electronic copy is available for download at: https://facultymanual.upd.edu.ph.