

# **FIDEL R. NEMENZO, D.Sc.**

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**Dr Fidel Nemenzo** is Professor of Mathematics and served as Chancellor of the University of the Philippines Diliman (UPD) from 2 March 2020 to 2 March 2023. He studied in UP Diliman and Sophia University in Tokyo, where he obtained his Master of Science and Doctor of Science degrees. His areas of research are number theory, elliptic curves and coding theory. Among the awards he has received are the Achievement Award in Mathematics from the National Research Council of the Philippines and the UP Diliman *Gawad Chancellor Para sa Pinakamahusay ng Guro*. He was President of both the Southeast Asian Mathematical Society and the Mathematical Society of the Philippines, and has held research and teaching posts in Singapore, Tokyo, Amsterdam, Munich and Phnom Pehn. In 2019, Dr Nemenzo was elected to the Governing Board of the National Research Council of the Philippines and chairs its Division of Mathematical Sciences.

## **Education**

University of the Philippines Diliman, B.S. Mathematics, 1985  
Sophia University, Tokyo, M.S. Mathematics, 1992  
Sophia University, Tokyo, D.Sc., Mathematics, 1998

## **Publications (math-related)**

- 1) R. A. Betty, L. E. Galvez, F. Nemenzo. *Self-orthogonal Codes Over  $F_q + uF_q$* . European Journal of Pure and Applied Mathematics, 2020.
- 2) J. Capco, M. Loquias, S. Manongsong, F. Nemenzo. *Inverse Kinematics of Some General 6R/P Manipulators*. Submitted to Mechanism and Machine Theory (Elsevier), 2019
- 3) R.A. Betty, F. Nemenzo and T. L. Vasquez. *Mass formula for self-dual codes over  $F_q + uF_q + u^2F_q$* . Journal of Applied Mathematics and Computing, 2017.
- 4) V.M. Aricheta, R. Celeste and F. Nemenzo. *Hecke operators and zeros of modular forms*. Bull. Malays. Math. Sci. Soc. 39. 2016, 1249-1257.
- 5) F. Nemenzo. *Mathematics and the Liberal Arts*. Phil. Humanities Review 17 (1). 2015. 86-97.
- 6) K. Nagata and F. Nemenzo. *Some properties of the binary Gray code*. IEEE Proceedings, International Conference on Computer Application Technologies, Japan, 2015, 72-75.
- 7) E. Colli, F. Nemenzo, K. Polthier and C. Rousseau. *Mathematics is everywhere*. Proceedings of the 2014 International Congress of Mathematicians, Vol 1. 2014, 819-831.
- 8) K. Nagata, F. Nemenzo and H. Wada. *Mass formula and structure of self-dual codes over  $Z_2^s$* . Designs, Codes and Cryptography 67(3). 2013, 293-402.
- 9) J. Dimabayao and F. Nemenzo. *On Tate-Shafarevich groups of families of elliptic curves*. Notes of Number Theory and Discrete Mathematics 18 (2), 2012, 42-55.
- 10) S. Manongsong, E. Tan, F. Nemenzo and M. Yap. *A new coordinatization of the hexagonal grid and its application to image representation*. IEEE Conference on Industrial Electronics and Applications, Singapore, 2011, 85-89.
- 11) K. Nagata, F. Nemenzo and H. Wada. *The number of self-dual codes over  $Z_p^3$* . Designs, Codes and Cryptography 50 (3), 2009, 291-303.
- 12) K. Nagata, F. Nemenzo and H. Wada. *On self-dual codes over  $Z_{16}$* . (book chapter in) Applied Algebra, Algebraic Algorithms and error-Correcting Codes, Lecture Notes in Computer Science 5527, 2009.
- 13) M.C. Amarra and F. Nemenzo. *On  $(1-u)$ -cyclic codes over  $F_p k + uF_p k$* . Applied Mathematics Letters 21, 2008, 1129-1133.
- 14) J.M. Balmaceda, R.A. Betty and F. Nemenzo. *Mass formula for self-dual codes over  $Z_p^2$* . Discrete Mathematics 308, 2008, 2984-3002.
- 15) K. Nagata, F. Nemenzo and H. Wada. *A constructive algorithm of self-dual error-correcting codes*. Proceedings of the 11th International Workshop on Algebraic and Combinatorial Coding Theory, 16-22 June 2008, Pamporovo, Bulgaria, 215-220.
- 16) F. Nemenzo. *On a theorem of Scholz on the class number of quadratic fields*. Proc. Japan Acad 80A, 2004, 9-11.

- 17) K. Betsumiya, S. Ling and F. Nemenzo. *Type II codes over  $F_2m + uF_2m$* . Discrete Mathematics 275, 2004, 43-65.
- 18) F. Nemenzo. *All congruent numbers less than 40000*. Proc. Japan. Acad. 74A (1), 1998.
- 19) F. Nemenzo. *On the rank of the elliptic curve  $y^2 = x^3 - 2379^2 x$* . Proc. Japan Acad. 72A (9), 1996.
- 20) F. Nemenzo and H. Wada. *An elementary proof of Gauss' genus theorem*. Proc. Japan Acad. 68A (4), 1992.
- 21) F. Nemenzo and H. Wada. *Classification of codes over finite rings*. Proceedings of the Annual Conference of the PCUA (Personal Computers' Users Association of Japan), 10 March 2006, Tokyo, Japan.
- 22) P. Caranay and F. Nemenzo. *A note on Scholz' biquadratic reciprocity law*. Matimyas Matematika 27 (1-3), 2004.
- 23) J. Balmaceda, R. Betty and F. Nemenzo. *On the number of distinct self-dual codes over  $Z_9$* . Matimyas Matematika 26, 2003.
- 24) F. Nemenzo. *A note on the class number of  $Q(\sqrt{pq})$* , Matimyas Matematika 18 (1), 1995.
- 25) F. Nemenzo. *A rational biquadratic reciprocity law*. Proceedings of the 1993 Mathematics Symposium of the National Research Council of the Philippines, 41-47.
- 26) F. Nemenzo. *On the determination of the principal genus of quadratic fields*. Proceedings of the International Workshop and Conference on Number Theory, University of Hongkong, July 1993.
- 27) F. Nemenzo, *Fermat's Last Theorem: A mathematical journey*. Matimyas Matematika 17(2), May 1994.
- 28) F. Nemenzo (with A. Ramirez and J. Caro). *TekKids 2: Introduction to Computers and IT*, Tech-Factors, Inc, 2005. [textbook for grade school]
- 29) F. Nemenzo (with Allan M. Canonigo), *MATH PLUS: Practical Life Uses and Solutions 7*, C&E Publishing, Inc, 2021. [high school textbook for Grade 7]
- 30) F. Nemenzo (with Allan M. Canonigo), *MATH PLUS: Practical Life Uses and Solutions 8*, C&E Publishing, Inc, 2021. [high school textbook for Grade 8]
- 31) F. Nemenzo (with Allan M. Canonigo), *MATH PLUS: Practical Life Uses and Solutions 9*, C&E Publishing, Inc, 2021. [high school textbook for Grade 9]
- 32) F. Nemenzo (with Allan M. Canonigo), *MATH PLUS: Practical Life Uses and Solutions 10*, C&E Publishing, Inc, 2021. [high school textbook for Grade 10]
- 33) F. Nemenzo, K. Nagata (trans.), *Firipin ni Okeru Kompyutariterashi: sono mezasu tokoro* (Computer Literacy in the Philippines: Where to?) [in Japanese], Pasokon Riterashi magazine, Feb. 1996, pp 27-31.
- 34) F. Nemenzo, *Some Prime Information*, Math Quest, Juniors, Vol 1, No. 1.
- 35) F. Nemenzo, *Hunting for Prime Numbers*, Math Quest, Juniors, Vol 1, No. 1.
- 36) F. Nemenzo, *The Fibonacci Sequence*, Math Quest, Juniors, Vol 1, No. 1.
- 37) F. Nemenzo, *Fibonacci in Nature*, Math Quest, Juniors, Vol 1, No. 1.

### **UP posts/appointments (main)**

2020-2023: Chancellor, UP Diliman

2014-2020: Vice-Chancellor for Research and Development, UP Diliman

2017-2020: Convenor, Data Science for Public Policy Program, Center for Integrative Development Studies, University of the Philippines

2019-2020: Chair, UP Diliman REPS Welfare Council

2016, 2018: OIC Director, Institute for Small Scale Industries

2009-present: Professor, Institute of Mathematics, UPD

2012-2014: Associate Dean for Academic Affairs, College of Science, UPD

2011-2012: Deputy-Director for Academic Affairs, Institute of Mathematics, UPD

2010-2011: Deputy-Director for Resources and Facilities, Institute of Mathematics, UPD

2006-2011: Coordinator, Science and Society Program, College of Science, UPD

1998-2009: Associate Professor, Institute of Mathematics, UPD

1996-1998: Assistant Professor, Institute of Mathematics, UPD

1992-1996: Instructor, Institute of Mathematics, UPD

### **Professional posts**

Chair, Division II (Mathematical Sciences), National Research Council of the Philippines  
Member, Governing Board, National Research Council of the Philippines  
President, Southeast Asian Mathematical Society, 2010-2012  
President, Mathematical Society of the Philippines, 2004-2010  
Editor-in-Chief, *Matimyas Matematika*, 2010-2014  
Member, Editorial Board, *Matimyas Matematika*, 2014-present  
Member, *Internasyonal na Lupon ng mga Editor ng Daluyan: Journal ng Wikang Filipino*  
Member, Board, Mathematical Society of the Philippines  
Member, Board, Center for Ethnomusicology, UP Diliman  
Member, Editorial Board (for mathematics), *4Open* (multidisciplinary) journal  
Member, Editorial Board, *Philippine Public Policy Journal*  
Member, Board of Trustees, Center for Integrated STEM Education

### **Other posts**

2012, 2014: Visiting Professor, Royal University of Phnom Pehn, Cambodia  
2009: Visiting Researcher, Ludwig Maximilians University, Munich, Germany  
2008: Visiting Research Fellow, Korteweg de Vries Institute of Mathematics, Universiteit van Amsterdam, Netherlands  
2007: Visiting Research Fellow, Tokyo Metropolitan University, Tokyo, Japan  
2005, 2006: Visiting Associate Professor, Sophia University, Tokyo, Japan  
2003: Visiting Researcher, Sophia University, Tokyo, Japan  
2001: Member, Institute of Mathematical Sciences, National University of Singapore,

### **Some awards/recognitions**

One UP Professorial Chair, 2019  
UP Diliman Centennial Faculty Grants  
NRCP Achievement Award (Mathematics), National Research Council of the Philippines, 2013  
UP Diliman Gawad Chancellor *para sa Pinakamahusay na Guro*, UPD, 2005  
Commencement Speaker, Cebu Normal University, March 2014  
International Mathematical Union grant for senior mathematicians, Seoul, 2014  
E&R Santos Meritorious Service Award, UP Diliman Mathematics Foundation, March 2014.  
UP Centennial Faculty Grant, 2013  
Crisostomo and Cristina Garcia Centennial Professorial Chair in Mathematics, 2008-10  
International Mathematical Union grant, Hyderabad, 2010  
International Mathematical Union grant, Madrid, 2006  
Metro Manila Commission Professorial Chair, 2007  
PHINMA Professorial Chair, 2005  
UP International Publication Awards  
Sophia University STEC (Science and Technology Exchange) Grant, 2006  
Hitachi Research Fellowship, 2005  
Institute of Mathematical Sciences (National Institute of Singapore) research fellowship, 2001  
Japan Society for the Promotion of Science (JSPS) PhD grant  
Japan Monbugakusho scholarship

### **Mentoring**

(thesis/dissertation advisor to 2 PhD, 13 M.S. and over 80 B.S. Mathematics students, all from the University of the Philippines; 2 Masters in Mathematics students, Royal University of Phnom Pehn)

**Fidel Nemenzo** is married to Dr Ma. Victoria Raquiza, associate professor of the UP National College of Public Administration and Governance. Their son, Julio Anton Mulawin, obtained his BS. Economics degree, *cum laude*, from the UP School of Economics in 2020.

## **Scaling UP Diliman as an Academic Center of Excellence: Inclusive, Smart, Sustainable, and Public Service-Oriented**

**Fidel R. Nemenzo, DSc**

When I presented my vision paper of UP Diliman (UPD) as a modern research university with a public mission in January 2020, none of us could have known that the next three years would be largely shaped by a global public health crisis. We were presented with a historic challenge on how to keep our campus safe in the face of the COVID-19 pandemic, and how we can continue to perform our three-fold mission of teaching, research, and public service. Today, when I look back on what we, as a community, accomplished in a period of crisis and disruption, I take pride in the ways that we drew on our resourcefulness and inner reserves of fortitude and creativity to be true to our mandate, and to serve the university and the nation.

In my run for a second term, I am inspired to see through what we have begun since 2020, apply and build on the lessons learned in managing the university, and continue to shepherd the Diliman campus toward a more inclusive, smart, and sustainable future.

Despite difficulties, my vision of UP had remained in sharp focus throughout the pandemic. In my next term, to take shape now in the freer context of a fully reopened campus, these remain the pillars of my leadership: academic excellence; the dignity and well-being of our community; democratic, efficient, and smart governance; academic freedom and academic integrity; and UPD as a safe, informed, vibrant, and sustainable campus.

Key to such a vision is cultivating the vibrancy of interdisciplinarity and collaboration. A key strength of UP Diliman is its diversity: it has a broad and comprehensive range of academic disciplines, and its faculty, students and staff come from different regions and socioeconomic backgrounds. The interaction of academic disciplines, political perspectives, life experiences, and cultural traditions has created a fertile ground in Diliman for critical and cross-disciplinary thinking and practice.

I will continue to strategically position UP as an interdisciplinary hub for cutting-edge research and development, policy studies, and advocacies. We will build and strengthen partnerships with government, industry, civil society, and other state universities and colleges (SUCs) to produce innovative and integrated solutions to our country's problems.

**Well-being and dignity of the community and beyond.** UPD can only perform its public mission if the well-being and dignity of the community are safeguarded and enhanced. The creation of an enabling and nurturing environment is essential for effective study and work. UP should provide students, faculty, REPS, and staff comfortable, healthy, modern, and agile arrangements that are conducive for study, work, and collaboration.

One of my earliest decisions as Chancellor was to form the UPD COVID-19 Task Force, which tapped the expertise of various disciplines and members of the UP community to plan and implement our university's response to the public health emergency. The TF developed a comprehensive strategy that enabled us to stay ahead of unfolding events and secure the health of the community as well as facilitate the shift of the university's teaching, research, and extension work to digital platforms.

More, we provided shelter to medical workers and opened three isolation facilities and a huge vaccination center for the use as well of neighboring communities in Quezon City. Because of our COVID-19 response, UP Diliman was among the recipients of the 4<sup>th</sup> Gawad Pangulo Award for Excellence in Public Service from the Development Academy of the Philippines in 2021.

The Task Force demonstrated what can happen when UP's best minds are able to work together for the common good. To document our experiences and share our lessons in crisis response with others in UP and beyond, we produced the e-book, *Kapit, Yakap, Tindig: How UP Diliman Took on the Challenge of COVID-19*.

Our efforts also included improving the services and facilities of the UP Health Service, expanding our mental health programs for students, staff and faculty through PsycServ and the UPD *Ugnayan ng Pahinungód*. Last year, UPD launched its UP Diliman Gender Agenda, in recognition of how the advancement of gender equality is a vital aspect of our community's programs for well-being. We will step up efforts to implement this across all units of the university and strengthen support for the Diliman Gender Office and the Office of Anti-Sexual Harassment.

With renovations done in the UP Health Service during the pandemic, we can now provide better healthcare for our constituents. We will continue to develop it as a model of a university-based primary care facility, with a strong public health advocacy, opportunities in academic and medical collaboration, and latitude for health programs innovation—to serve and care for both our direct constituencies and surrounding communities.

We will also continue to work with neighboring barangays and the city government to address the situation of informal settler families living on campus.

**Academic excellence and the promotion of academic freedom and integrity.** The challenge in the next three years is to advance the gains we've made in our academic programs, including the adoption of new modes of teaching and learning, as well as the introduction of new degree programs that will prepare our students for the rapidly-changing world under the 4th and 5th Industrial Revolutions.

We have learned through the remote learning setup and online service delivery that we need to regularly upgrade our digital infrastructure alongside upskilling our staff and service

providers. We have to continue to develop our homegrown University Virtual Learning Environment (UVLê), and continue what we started in upgrading and digitizing our library services. In the next three years, we will work with the different units in enhancing the hybridization of their academic offerings and the digitization of their resources.

In keeping pace with digital transformation, we have also instituted new PhD programs: a tri-college PhD program in Data Science offered by the College of Science, College of Engineering and School of Statistics, and the PhD in Artificial Intelligence at the College of Engineering.

In UP, we have leveraged advancements in these fields to continue innovations in the development of homegrown software and technologies, such as PUSO, UTAK, BULSA, COSPay, and CRS. We can continue to strengthen these efforts and realize the potentials they open for administrative efficiency, cutting-edge research, more inventive extension programs, and interdisciplinary collaboration that can blaze new trails in policy, governance, and other avenues of applied research.

While new technologies (such as AI) are enhancing our ways of learning and teaching, UPD also needs to lead in the discussion of how technology is shaping education and what we can do to promote academic integrity and uphold academic standards.

That said, even as we seek to modernize the content and delivery of our courses, I remain committed to strengthening UP's General Education (GE) program. General Education, combined with the students' major fields of study, continues to be the bedrock of an all-round education. It helps develop the creative and critical faculties of our students, enabling them to transform risks and uncertainties that come with an increasingly volatile world into opportunities for advancement.

Certainly, just as we strengthen and expand our international linkages, we will also continue to promote local history and culture by way of research, creative work, and other homegrown projects. We shall branch out widely by taking root deeply in the vibrant and fertile soil of our community, people, and culture.

**Democratic, efficient and effective governance, the promotion of administrative and operational efficiency.** As we continue to review and streamline our internal processes, we aggressively advance our digital transformation agenda by mobilizing our own talents, skills, and homegrown innovations.

In recognition of our process audits, innovations, and improvements in the last three years, UP Diliman (UPD) received from the Anti-Red Tape Authority (ARTA) the Silver Award for garnering a 90 to 94% rating in its 2022 ARTA Report Card Survey (RCS) – an honor it shared the Department of Foreign Affairs, Department of Trade and Industry, Government Service Insurance System, and the Philippine Children's Medical Center.

BULSA -- which is a homegrown software system, just like CRS -- has already processed close to 50,000 transactions since we launched it last 2021. Unlike paper-based forms that need to be physically transported between offices to be manually processed and signed, electronic processing can be done quickly, conveniently and reliably. We can now track the progress of a transaction, know who is processing it, and determine how long or how quickly it took. Transactions which used to take around 1-2 months to be manually processed from start to finish now take an average of 13.21 days to process with BULSA.

Systems like BULSA, including a host of other systems either already being deployed or are under development by our own faculty, staff and students, such as e-BODEGA (Electronic Buying of Common Use Supplies and Equipment and Organized Disposition of Government Assets), COSPay (Contract of Services Payroll System), PUSO (Personnel Unified Systems Outlook), UTAK (University Transactions Automated Kit), and a host of others, will digitally transform our University and contribute to the ease and efficiency of governance, enhance transparency, and promote greater accountability. We want to continue these projects and to reap the fruits that we have cultivated together in the last three years.

We will offer to share these systems with our fellow constituent universities and explore if they have systems we can likewise adopt. This cross collaboration and convergence will hopefully contribute towards the System-wide digital transformation agenda in the process. As the national university, we will not stop here: the products of our creativity, expertise and innovation should be open to and benefit everyone, including other state universities and colleges.

**Safe, smart, resilient and sustainable campus.** As university life transitions to normalcy, we want everyone to return to a safer, smart, resilient and sustainable campus. In the next three years, we shall train our sights on challenging issues such as campus mobility and transportation, safety, and sustainability. We will scale homegrown R&D efforts in UPD and partner with the private sector to provide clean, efficient and quiet campus-wide transportation, that can also provide livelihood for members of our communities.

Taking off from a project that began in 2018, the *UPD Biodiversity Management Handbook* was launched in 2021 thanks to the efforts of the Diliman Environmental Management Office and the Task Force on Environmental Sustainability. This has led to other initiatives such as the declaration of April as Environmental Sustainability Month, the launch of the Environmental Sustainability web page on the UPD website, and the creation of the Roadmap to Plastic-Free UP Diliman.

Our campus environment will incorporate nature through open green spaces, protected biodiversity grounds, and rainwater detention ponds that will also serve as relaxing water-scapes. Diliman is home not only to more than 30,000 students and employees, but an ecosystem of hundreds of species of flora and fauna. We will reiterate our commitment to

protect and revitalize this environment, which gives UP Diliman a unique and peaceful sense of place.

The road to making UP Diliman a smart, resilient, and sustainable campus is a long one, but the last three years have already poised us to take greater strides on this road; and I am certain the steps we have already taken to improve both virtual and natural environments of UP will lead to itineraries of greater and more promising changes of safety and sustainability in our environmental management and overall community life.

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While we find ourselves gradually adapting to the new normal, the pandemic has left the nation and the rest of the world in a more vulnerable state than ever before. As a national university, UP has always played a critical role in nation-building. I am proud that these times of crisis have only strengthened our commitment to public service and our resolve to do our best—and, despite any lapses, to always do better—for our community and our nation.

For all our shared struggles, together, we managed to plant important seeds of change and transformation despite the most unfavorable conditions in the past three years. As the ways clear for us to build and cultivate together under happier circumstances, I would be honored and grateful to serve as Chancellor again. My vision for a UP Diliman that is inclusive, smart, sustainable, and public service-oriented has not been only mine to realize; and in pursuing its flowering, we will remain anchored on our shared values and commitments as *Iskolar ng bayan, Iskolar para sa Bayan*.