

# Badih Ghusayni, Ph.D.

## Professor of Mathematics (Emeritus)

Lebanese University, Lebanon

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## Academic Profile

Professor of Mathematics with more than three decades of international academic experience in the United States and Lebanon. Research expertise spans analytic number theory, complex and harmonic analysis, approximation theory, and the Riemann zeta function. Author of multiple textbooks and monographs, with sustained contributions to both pure mathematical research and mathematics education, including early adoption of online and computer-assisted instruction.

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## Education

- **Ph.D. in Mathematics**, Auburn University, USA, December 1986
  - **M.S. in Mathematics**, American University of Beirut (AUB), Lebanon, February 1980
  - **B.S. in Mathematics** and **Teaching Diploma in Mathematics Education**, AUB, Lebanon, February 1978
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## Academic Appointments

- **Full Tenured Professor (Emeritus)**, Department of Mathematics, Lebanese University, Lebanon (December 2011 – July 2019)
- **Associate Professor**, Department of Mathematics, Lebanese University, Lebanon (October 1998 – November 2011)
- **Associate Professor**, Division of Natural Sciences, Mathematics, and Computer Science, Voorhees College, USA (August 1997 – May 1998)
- **Lecturer**, Department of Mathematics, Southern Illinois University, USA (August 1992 – May 1997)
- **Assistant Professor**, Department of Mathematics, North Central College, USA (June 1987 – June 1992)  
*Recipient of Faculty Research Award, Summer 1988*
- **Part-Time Faculty**, College of Science, College of DuPage, USA (Summer 1987)
- **Teaching Assistant**, Department of Mathematics, Auburn University, USA (September 1984 – December 1986)

- **Teaching Assistant**, Department of Mathematics, University of Toledo, USA (August 1981 – June 1984)
  - **Full-Time Instructor**, Department of Mathematics, American University of Beirut (February 1980 – June 1981)
  - **Part-Time Instructor**, Beirut University College (now Lebanese American University) (February 1980 – June 1981)
  - **Teaching Assistant**, Department of Mathematics, American University of Beirut (February 1978 – February 1980)
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## Books and Monographs

1. *Number Theory from an Analytic Point of View*, 2003.
  2. *Théorie des Nombres d'un Point de Vue Analytique*, 2003.
  3. *Solved Problems in Analysis: A Companion to Math Majors*, 2008.
  4. *Classical Real Analysis*, 2009.
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## Refereed Journal Publications

1. Integral representations of 2-periodic and trigonometrically convex functions, *Complex Variables*, **14** (1990), 129–138.
2. On approximation by a nonfundamental sequence of translates, *Journal of Mathematical Analysis and Applications*, **199** (1996), 469–477.
3. Products and sums with applications, *Missouri Journal of Mathematical Sciences*, **9** (1997), 90–94.
4. Entire functions of order one and infinite type, *Missouri Journal of Mathematical Sciences*, **10** (1998), 20–27.
5. Some representations of functions, *Missouri Journal of Mathematical Sciences*, **10** (1998), 169–175.
6. Perfect numbers and some of their properties, *Proceedings of the International Conference on Scientific Computations*, Lebanese American University (1999), 117–126.
7. Euler-type formulas, *International Journal of Mathematical and Computational Science*, **7** (2012), no. 1, 85–92.
8. Characterizations of arithmetic progression functions with counterexamples in interpolation, *Missouri Journal of Mathematical Sciences*, **15** (2003), 110–128.
9. Exploring new identities with Maple as a tool, *WSEAS Transactions on Information Science and Applications*, **1** (2004), no. 5, 1151–1157.
10. A collection of number and function characterizations, *WSEAS Transactions on Mathematics*, **5** (2005), no. 1, 12–17.
11. Maple explorations, perfect numbers, and Mersenne primes, *International Journal of Mathematics Education in Science and Technology*, **36** (2005), no. 6, 643–654.

12. Towards a proof of the twin prime conjecture, *International Journal of Pure and Applied Mathematics*, **47** (2008), no. 1, 31–40.
  13. The value of the zeta function at an odd argument, *International Journal of Mathematical and Computational Science*, **4** (2009), no. 1, 21–30.
  14. Generalized integration formulas, *International Journal of Mathematical and Computational Science*, **5** (2010), no. 1, 7–14.
  15. Results connected to the Riemann hypothesis, *International Journal of Mathematical Analysis*, **25** (2012), 1235–1250.
  16. The completed zeta function and the Riemann hypothesis, *International Journal of Mathematical and Computational Science*, **9** (2014), no. 1, 31–48.
  17. A generalization of Wallis' formula, *International Journal of Mathematical and Computational Science*, **10** (2015), no. 1, 51–54.
  18. Half a dozen famous unsolved problems in mathematics with suggestions toward their resolution, *International Journal of Mathematical and Computational Science*, **11** (2016), no. 2, 257–273.
  19. Favorite mathematics topics from the 12th century to the 21st century, *International Journal of Mathematical and Computational Science*, **13** (2018), no. 1, 83–104.
  20. Subsets of prime numbers, *International Journal of Mathematical and Computational Science*, **7** (2012), no. 2, 101–112.
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## Research Interests

- **Analytic Number Theory:** Distribution of primes, twin primes, perfect numbers, zeta and L-functions, Tauberian theorems
  - **Complex and Harmonic Analysis:** Entire functions, Fourier transforms, integral and series representations
  - **Approximation Theory:** Approximation by nonfundamental sequences of translates
  - **Mathematics Education and Technology:** Online instruction, Maple-assisted exploration
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## Online Teaching and Educational Initiatives

- **Complex Analysis (Online Course)**, Avicenna Virtual Campus, supported by UNESCO
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## Selected Invited and Conference Presentations

- Integral representations of periodic and trigonometrically convex functions, Southeastern Conference, Clemson University, USA, 1985.
- Entire functions and Fourier transforms, AMS–MAA Annual Meeting, San Antonio, USA, 1987.

- The order of an entire function and the twin prime conjecture, International Conference on Analytic Number Theory, University of Illinois at Urbana–Champaign, USA, 1989.
- The order of a function and the twin prime conjecture, AMS–MAA Annual Meeting, San Francisco, USA, 1991.
- Entire functions of order one and infinite type, AMS–MAA Annual Meeting, Baltimore, USA, 1992.
- Towards a proof of the twin prime conjecture, AMS–MAA Annual Meeting, San Diego, USA, 2008.
- The value of the zeta function at an odd argument, AMS–MAA Annual Meeting, San Diego, USA, 2010.