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Professor
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Fields of interest

Stochastic Analysis, Stochastic Differential Equations, Fractional Differential Equations, Controllability theory, Stochastic and Deterministic Optimal Control, Approximation Theory, Positive Linear Operators, q-Calculus, q-Parametric Operators, Special Functions

Education - Degrees

- Ph.D. in Applied Mathematics, 1984, Institute of Cybernetics, Baku
- M. Sc. in Mathematics, 1980 Baku State University, Baku
- B. Sc. in Mathematics, 1980 Baku State University, Baku

Appointments-Experience

- **1993–present:** Department of Mathematics, Eastern Mediterranean University, Full Professor (2005-present), Associate Professor (1999-2005).
- **1980–1993:** Institute of Cybernetics, Baku State University, Associate Professor, on part time base (1986-1993), Assistant Professor on part time base (1984-1986).
- **Undergraduate courses taught:** Calculus, Advanced Calculus, Complex Analysis, Real Analysis, Partial Differential Equations, Theory of Differential Equations, Functional Analysis, Applied Mathematics, Linear Algebra.
- **Postgraduate courses taught:** Mathematical Analysis, Functional Analysis, Theory of Optimal Control, Nonlinear Differential Equations, Fractional Differential Equations.

Supervision of PhD Theses

- Muath Awadalla
Thesis Title: Fractional Differential Equations with Fractional Boundary Conditions
Ph.D. completed in February 2018, EMU
- Bilal Sami
Thesis Title: Fractional Differential Equations with Fractional Boundary Conditions
Ph.D. completed in February 2018, EMU
- Helal Mahmoud
Thesis Title: Fractional Differential Equations with Fractional Boundary Conditions
Ph.D. completed in June 2016, EMU

- Mohammad Momenzadeh
Thesis Title: A Comprehensive Study On q -Polynomials
Ph.D. completed in February 2016, EMU
- Sinem Unul
Thesis Title: On a Class Fractional Differential Equations
Ph.D. completed in February 2016, EMU
- Marzieh Eini Keleshteri
Thesis Title: Comprehensive Study On The Class Of q -Appell Polynomials
Ph.D. completed in July 2015, EMU

- Afet Oneren
Thesis Title: Q -polynomials
Ph.D. completed in October 2014, EMU
- Mustafa Kara
Thesis Title: Generalized Kantorovich type Operators
Ph.D. completed in January 2011, EMU
- Havva Kaffaoglu
Thesis Title: Phillips type Operators Based on q -integers
Ph.D. completed in May 2011, EMU
- Pembe Sabancigil
Thesis Title: Bernstein type Operators Based on q -integers
Ph.D. completed in May 2009, EMU
- Muhammed Mattar
Thesis Title: Controllability of Backward Equations
Ph.D. completed in June 2005, EMU
- Sonuc Zorlu
Thesis Title: Controllability of Stochastic Systems
Ph.D. completed in May 2003, EMU
- Ali Denker
Thesis Title: Controllability concepts for stochastic control systems
Ph.D. completed in May 2002, EMU

Supervision of MS Theses

- Reger Ibrahim
Thesis title: Riemann-Liouville type FDE
M.Sc. completed: 2016

- Ojo Gbenga Olayinka
Thesis title: Adomian's Decomposition of Multi-Order Fractional
Differential Equations
M.Sc. completed: 2016
- Hogir Ageed Khaleel
Thesis title: On Fractional Differential Equations
M.Sc. completed: 2015
- Abdullah Hasan Jangeer
Thesis title: Fractional Integral Inequalities of Gronwall Type
M.Sc. completed: 2015
- Sevda Isiktas
Thesis title: Controllability of linear deterministic systems
M.Sc. completed: 1997
- Verda Peyker
Thesis title: Linear retarded differential equations
M.Sc. completed: 2000
- Ceren Mirillo
Thesis title: Linear retarded differential equations
M.Sc. completed: 2004

- Umut Yolsal
Thesis title: The Gauge Integral
MSc completed: 2004
- Mustafa Kara
Thesis title: The Calculus of Time Scales
M.Sc. completed: 2005
- Benan Gencsu
Thesis title: Inequalities on Time Scales
M.Sc. completed: 2005
- Havva Kafaoglu
Thesis title: Differential Equations on Time Scales
M.Sc. completed: 2006

NAZIM MAHMUDOV

C. V.

Miscellaneous

- **EMU Activities:** Chair of Mathematics Department of EMU (2012-), Member of Senate of EMU, Member of Faculty Board (Arts and Sciences of EMU), Chair (2009-2012) and member of Graduate Study Committee of Mathematics Department of EMU, Member of Curriculum Committee of Mathematics Department of EMU (2009-2012).
- **Membership:** American Mathematical Society.
- **Member of Editorial Boards:**
 - ❖ Applied and Computational Mathematics
 - ❖ Azerbaijan Journal of Mathematics
 - ❖ Journal of Mathematical Control Science and Applications
 - ❖ Abstract and Applied Analysis
 - ❖ International Journal of Differential Equations
 - ❖ Journal of Applied Mathematics
 - ❖ Mathematical Problems in Engineering
 - ❖ Fractional Differential Calculus
 - ❖ Ilirias Journal of Mathematics
 - ❖ Advances in Analysis
- **Languages:** English, Russian, Turkish, Azerbaijani.
- **Computer Skills:** LaTeX, MS Word.

SELECTED PUBLICATIONS

Journal Papers

1. NI Mahmudov, S Emin, Fractional-order boundary value problems with Katugampola fractional integral conditions *Advances in Difference Equations* 2018 (1), 81
2. NI Mahmudov, Representation of solutions of discrete linear delay systems with non permutable matrices *Applied Mathematics Letters* 85, 8-14
3. NI Mahmudov, Partial-approximate controllability of nonlocal fractional evolution equations via approximating method *Applied Mathematics and Computation* 334, 227-238
4. NI Mahmudov, Finite-approximate controllability of fractional evolution equations: variational approach *Fractional Calculus and Applied Analysis* 21 (4), 919-93

5. SG Gal, NI Mahmudov, BD Opris, Approximation with an Arbitrary Order by Szasz, Szasz-Kantorovich and Baskakov Complex Operators in Compact Disks Azerbaijan Journal of Mathematics-Print ISSN: 2218-6816, Online ISSN: 2221
6. NI Mahmudov, M Awadalla, K Abuassba, Nonlinear sequential fractional differential equations with nonlocal boundary conditions Advances in Difference Equations 2017 (1), 319
7. NI Mahmudov, H Mahmoud, Four-point impulsive multi-orders fractional boundary value problems J. Comput. Anal. Appl 22 (7), 1249-1260
8. NI Mahmudov, R Murugesu, C Ravichandran, V Vijayakumar, Approximate controllability results for fractional semilinear integro-differential inclusions in Hilbert spaces Results in Mathematics 71 (1-2), 45-61
9. N Mahmudov, MM Matar, EXISTENCE OF MILD SOLUTION FOR HYBRID DIFFERENTIAL EQUATIONS WITH ARBITRARY FRACTIONAL ORDER TWMS JOURNAL OF PURE AND APPLIED MATHEMATICS 8 (2), 160-169
10. NI Mahmudov, Finite-approximate controllability of evolution equations, Appl. Comput. Math 16 (2), 159-167
11. R Sakthivel, Y Ren, A Debbouche, NI Mahmudov Approximate controllability of fractional stochastic differential inclusions with nonlocal conditions Applicable Analysis 95 (11), 2361-2382
12. NI Mahmudov, V Vijayakumar, R Murugesu, Approximate controllability of second-order evolution differential inclusions in Hilbert spaces Mediterranean Journal of Mathematics 13 (5), 3433-3454
13. N Mahmudov, Approximation Properties of the q -Balázs–Szabados Complex Operators in the Case $q \geq 1$, Computational Methods and Function Theory 16 (4), 567–583
14. NI Mahmudov, MA Mckibben, ON APPROXIMATELY CONTROLLABLE SYSTEMS
15. Appl. Comput. Math 15 (3), 247-264
16. MJ Mardanov, NI Mahmudov, YA Sharifov, Existence and uniqueness results for q -fractional difference equations with p -Laplacian operators Advances in Difference Equations 2015 (1), 185
17. NI Mahmudov, M Kara, Approximation properties of weighted Kantorovich type operators in compact disks Journal of Inequalities and Applications 2015 (1), 46
18. Mardanov, Misir J; Malik, Samin T; Mahmudov, Nazim I; On the theory of necessary optimality conditions in discrete systems. *Adv. Difference Equ.* 2015, 2015:28.
19. Mahmudov, Nazim I; Kara, Mustafa; Approximation properties of weighted Kantorovich type operators in compact disks. *J. Inequal. Appl.* 2015, 2015:46.
20. Mahmudov, Nazim I. Difference equations of q -Appell polynomials. *Appl. Math. Comput.* 245 (2014), 539–543
21. Ganesh, Ramakrishnan; Sakthivel, Rathinasamy; Mahmudov, Nazim I. Approximate controllability of fractional functional equations with infinite delay. *Topol. Methods Nonlinear Anal.* 43 (2014), no. 2, 345–364.
22. Mahmudov, N. I.; Unul, S. Existence of solutions of $\alpha \in (2,3]$ order fractional three-point boundary value problems with integral conditions. *Abstr. Appl. Anal.* 2014, Art. ID 198632, 12 pp.
23. Mahmudov, Nazim I.; Keleshteri, Marzieh Eini q -extensions for the Apostol type polynomials. *J. Appl. Math.* 2014, Art. ID 868167, 8 pp.
24. Mahmudov, N. I.; Momenzadeh, M. On a class of q -Bernoulli, q -Euler, and q -Genocchi polynomials. *Abstr. Appl. Anal.* 2014, Art. ID 696454, 10 pp.
25. Mahmudov, N. I.; Gupta, Vijay Approximation by complex q -Durrmeyer polynomials in compact disks. *Acta Math. Appl. Sin. Engl. Ser.* 30 (2014), no. 1, 65–74.
26. Mahmudov, N. I.; Akkeleş, A.; Öneren, A. On a class of two dimensional (w,q) -Bernoulli and (w,q) -Euler polynomials: properties and location of zeros. *J. Comput. Anal. Appl.* 16 (2014), no. 2, 282–292.
27. Mahmudov, N. I.; Zorlu, S. On the approximate controllability of fractional evolution equations with compact analytic semigroup. *J. Comput. Appl. Math.* 259 (2014), part A, 194–204.
28. Gal, Sorin G.; Mahmudov, Nazim I.; Kara, Mustafa Approximation by complex q -Szász-Kantorovich operators in compact disks, $q > 1$. *Complex Anal. Oper. Theory* 7 (2013), no. 6, 1853–1867.

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C. V.

29. Mahmudov, Nazim Idrisoglu q -Szász operators which preserve x^2 . *Math. Slovaca* 63 (2013), no. 5, 1059–1072.

30. Ganesh, R.; Sakthivel, R.; Ren, Yong; Anthoni, S. M.;Mahmudov, N. I. Controllability of neutral fractional functional equations with impulses and infinite delay. *Abstr. Appl. Anal.* 2013, Art. ID 901625, 12 pp.
31. Mahmudov, N. I. Asymptotic properties of iterates of certain positive linear operators. *Math. Comput. Modelling* 57 (2013), no. 5-6, 1480–1488.
32. Mahmudov, N. I.; Zorlu, S. Approximate controllability of fractional integro-differential equations involving nonlocal initial conditions. *Bound. Value Probl.* 2013, 2013:118, 16 pp.
33. Mahmudov, Nazim I.; Keleshteri, M. Eini On a class of generalized q -Bernoulli and q -Euler polynomials. *Adv. Difference Equ.* 2013,2013:115, 10 pp.
34. Mahmudov, N. I.; Kara, M. Approximation theorems for complex Szász-Kantorovich operators. *J. Comput. Anal. Appl.* 15 (2013), no. 1, 32–38.
35. Ganesh, R.; Sakthivel, R.; Mahmudov, N. I.; Anthoni, S. M. Approximate controllability of fractional integrodifferential evolution equations. *J. Appl. Math.* 2013, Art. ID 291816, 7 pp.
36. Mahmudov, Nazim I. On a class of q -Bernoulli and q -Euler polynomials. *Adv. Difference Equ.* 2013,2013:108, 11 pp.
37. Mahmudov, N. I. Approximate controllability of fractional Sobolev-type evolution equations in Banach spaces. *Abstr. Appl. Anal.* 2013, Art. ID 502839, 9 pp.
38. Sakthivel, R.; Revathi, P.; Mahmudov, N. I. Asymptotic stability of fractional stochastic neutral differential equations with infinite delays. *Abstr. Appl. Anal.* 2013, Art. ID 769257, 9 pp.
39. Mahmudov, N. I.; Şemi, N. Approximate controllability of semilinear control systems in Hilbert spaces. *TWMS J. Appl. Eng. Math.* 2 (2012), no. 1, 67–74.
40. Mahmudov, N. I. Approximation by the q -Szász-Mirakjan operators. *Abstr. Appl. Anal.* 2012, Art. ID 754217, 16 pp.
41. Mahmudov, Nazim I. Approximation properties of bivariate complex q -Bernstein polynomials in the case $q>1$. *Czechoslovak Math. J.* 62(137)(2012), no. 2, 557–566.
42. Mahmudov, N. I. q -analogues of the Bernoulli and Genocchi polynomials and the Srivastava-Pintér addition theorems. *Discrete Dyn. Nat. Soc.* 2012, Art. ID 169348, 8 pp.
43. Mahmudov, Nazim; Gupta, Vijay; Kaffaoğlu, Havva On certain q -Phillips operators. *Rocky Mountain J. Math.* 42 (2012), no. 4, 1291–1312.
44. Mahmudov, N. I.; Kara, M. Approximation theorems for generalized complex Kantorovich-type operators. *J. Appl. Math.* 2012, Art. ID 454579, 14 pp.
45. Mahmudov, Nazim Idrisoglu; Sabancıgil, Pembe Voronovskaja type theorem for the Lupaş q -analogue of the Bernstein operators. *Math. Commun.* 17 (2012), no. 1, 83–91.
46. Sakthivel, R.; Mahmudov, N. I.; Nieto, Juan. J. Controllability for a class of fractional-order neutral evolution control systems. *Appl. Math. Comput.* 218 (2012), no. 20, 10334–10340.
47. Mahmudov, N. I.; Gupta, Vijay Approximation by genuine Durrmeyer-Stancu polynomials in compact disks. *Math. Comput. Modelling* 55(2012), no. 3-4, 278–285.
48. Gal, Sorin G.; Gupta, Vijay; Mahmudov, Nazim I. Approximation by a complex q -Durrmeyer type operator. *Ann. Univ. Ferrara Sez. VII Sci. Mat.* 58 (2012), no. 1, 65–87.
49. Mahmudov, Nazim; Sabancıgil, Pembe A q -analogue of the Meyer-König and Zeller operators. *Bull. Malays. Math. Sci. Soc. (2)* 35 (2012), no. 1, 39–51.
50. Mahmudov, N. I. Asymptotic properties of powers of linear positive operators which preserve e^2 . *Comput. Math. Appl.* 62 (2011), no. 12, 4568–4575.
51. Mahmudov, Nazim Idrisoglu; Özarslan, Mehmet Ali; Sabancıgil, Pembe I-approximation properties of certain class of linear positive operators. *Studia Sci. Math. Hungar.* 48 (2011), no. 2, 205–219.
52. Mahmudov, Nazim; Gupta, Vijay On certain q -analogue of Szász Kantorovich operators. *J. Appl. Math. Comput.* 37 (2011), no. 1-2, 407–419.
53. Mahmudov, N. I. Higher order limit q -Bernstein operators. *Math. Methods Appl. Sci.* 34 (2011), no. 13, 1618–1626.
54. Sakthivel, R.; Ren, Yong; Mahmudov, N. I. On the approximate controllability of semilinear fractional differential systems. *Comput. Math. Appl.* 62 (2011), no. 3, 1451–1459.
55. Mahmudov, N. I. q -Szász-Mirakjan operators which preserve x^2 . *J. Comput. Appl. Math.* 235 (2011), no. 16, 4621–4628.

56. Sakthivel, R.; Mahmudov, N. I.; Ren, Yong Approximate controllability of the nonlinear third-order dispersion equation. *Appl. Math. Comput.* 217 (2011), no. 21, 8507–8511.
57. Mahmudov, N. I. Approximation by Bernstein-Durrmeyer-type operators in compact disks. *Appl. Math. Lett.* 24 (2011), no. 7, 1231–1238.
58. Mahmudov, N. I. Approximation by genuine q -Bernstein-Durrmeyer polynomials in compact disks. *Hacet. J. Math. Stat.* 40 (2011), no. 1, 77–89.
59. Özarlan, M. Ali; Duman, Oktay; Mahmudov, N. I. Local approximation properties of modified Baskakov operators. *Results Math.* 59 (2011), no. 1-2, 1–11.
60. Sakthivel, R.; Nieto, Juan J.; Mahmudov, N. I. Approximate controllability of nonlinear deterministic and stochastic systems with unbounded delay. *Taiwanese J. Math.* 14 (2010), no. 5, 1777–1797.
61. Mahmudov, N. I., Approximation properties of complex q -Szász-Mirakjan operators in compact disks. *Comput. Math. Appl.* 60 (2010), no. 6, 1784–1791.
62. Mahmudov, N. I., Convergence properties and iterations for q -Stancu polynomials in compact disks. *Comput. Math. Appl.* 59 (2010), no. 12, 3763–3769.
63. Mahmudov, N. I., Statistical approximation of Baskakov and Baskakov-Kantorovich operators based on the q -integers. *Cent. Eur. J. Math.* 8(2010), no. 4, 816–826.
64. Mahmudov, N. I., Approximation theorems for certain positive linear operators. *Appl. Math. Lett.* 23 (2010), no. 7, 812–817.
65. Mahmudov, N. I.; Sabancigil, P., On genuine q -Bernstein-Durrmeyer operators. *Publ. Math. Debrecen* 76 (2010), no. 3-4, 465–479.
66. Mahmudov, N. I.; Kaffaoğlu, H., On q -Szász-Durrmeyer operators. *Cent. Eur. J. Math.* 8 (2010), no. 2, 399–409.
67. Mahmudov, N. I., The moments for q -Bernstein operators in the case $0 < q < 1$. *Numer. Algorithms* 53 (2010), no. 4, 439–450.
68. Mahmudov, N. I.; Sabancigil, P., Some approximation properties of q -parametric BBH operators, *Journal of Computational Analysis and Applications*, vol. 12, no. 1, pp. 111–123, 2010.
69. Sakthivel, R.; Mahmudov, N. I.; Lee, Sang-Gu Controllability of non-linear impulsive stochastic systems. *Internat. J. Control* 82 (2009), no. 5, 801--807.
70. Mahmudov, Nazim I. Korovkin-type theorems and applications. *Cent. Eur. J. Math.* 7 (2009), no. 2, 348--356.
71. Sakthivel, R.; Mahmudov, N. I.; Kim, J. H. On controllability of second order nonlinear impulsive differential systems. *Nonlinear Anal.* 71 (2009), no. 1-2, 45--52.
72. Sakthivel, R.; Anandhi, E. R.; Mahmudov, N. I. Approximate controllability of second-order systems with state-dependent delay. *Numer. Funct. Anal. Optim.* 29 (2008), no. 11-12, 1347--1362.
73. Mahmudov, N. I.; Sabancigil, P. q -parametric Bleimann Butzer and Hahn operators. *J. Inequal. Appl.* 2008, Art. ID 816367, 15 pp.
74. Samoilenko, A. M.; Mahmudov, N. I.; Stanzhitskii, A. N. Existence, uniqueness, and controllability results for neutral FSDES in Hilbert spaces. *Dynam. Systems Appl.* 17 (2008), no. 1, 53--70.
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76. Mahmudov, Nazim I. Approximate controllability of evolution systems with nonlocal conditions. *Nonlinear Anal.* 68 (2008), no. 3, 536--546.
77. Mahmudov, Nazim I.; McKibben, Mark A. On a class of backward McKean-Vlasov stochastic equations in Hilbert space: existence and convergence properties. *Dynam. Systems Appl.* 16 (2007), no. 4, 643--664.
78. Samoilenko, A. M.; Mahmudov, N. I.; Stanzhitskii, A. N. The averaging method and two-sided bounded solutions of stochastic Itô systems. (Russian) *Differ. Uravn.* 43 (2007), no. 1, 52--63, 142.
79. Sakthivel, R.; Mahmudov, N. I.; Kim, J. H. Approximate controllability of nonlinear impulsive differential systems. *Rep. Math. Phys.* 60 (2007), no. 1, 85--96.

80. Mahmudov, N. I.; McKibben, M. A. On backward stochastic evolution equations in Hilbert spaces and optimal control. *Nonlinear Anal.* 67 (2007), no. 4, 1260--1274.
81. Bashirov, A. E.; Mahmudov, N.; Ćemić, N.; Etikan, H. Partial controllability concepts. *Internat. J. Control* 80 (2007), no. 1, 1--7.
82. Sakthivel, R.; Kim, J.-H.; Mahmudov, N. I. On controllability of nonlinear stochastic systems. *Rep. Math. Phys.* 58 (2006), no. 3, 433--443.
83. Mahmudov, N. I.; McKibben, M. A. Approximate controllability of second-order neutral stochastic evolution equations. *Dyn. Contin. Discrete Impuls. Syst. Ser. B Appl. Algorithms* 13 (2006), no. 5, 619--634.
84. Dauer, J. P.; Mahmudov, N. I.; Matar, M. M. Approximate controllability of backward stochastic evolution equations in Hilbert spaces. *J. Math. Anal. Appl.* 323 (2006), no. 1, 42--56.
85. Mahmudov, N. I.; McKibben, M. A. Abstract second-order damped McKean-Vlasov stochastic evolution equations. *Stoch. Anal. Appl.* 24 (2006), no. 2, 303--328.
86. Mahmudov, N. I. Existence and uniqueness results for neutral SDEs in Hilbert spaces. *Stoch. Anal. Appl.* 24 (2006), no. 1, 79--95.
87. Mahmudov, N. I.; Zorlu, S. Controllability of semilinear stochastic systems. *Internat. J. Control* 78 (2005), no. 13, 997--1004.
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91. Dauer, J. P.; Mahmudov, N. I. Remark on existence result for second order evolution equations in Banach spaces. *Int. J. Pure Appl. Math.* 12 (2004), no. 4, 471--482.
92. Dauer, J. P.; Mahmudov, N. I. Controllability of stochastic semilinear functional differential equations in Hilbert spaces. *J. Math. Anal. Appl.* 290 (2004), no. 2, 373--394.
93. Mahmudov, Nazim I. Controllability and observability of linear stochastic systems in Hilbert spaces. *Stochastic analysis and related topics VIII*, 151--167, *Progr. Probab.*, 53, Birkhäuser, Basel, 2003.
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100. Mahmudov, N. I. The maximum principle for stochastic evolution systems in Hilbert spaces. *Int. J. Pure Appl. Math.* 2 (2002), no. 3, 287--298.
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103. Mahmudov, N. I.; Denker, A. On controllability of linear stochastic systems. *Internat. J. Control* 73 (2000), no. 2, 144--151.
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Chapter in Book

- Mahmudov, N. I. Maximum Principle for Stochastic Discrete-Time Ito Equations , Brownian Motion: Elements, Dynamics and Applications, Chapter 6, Nova 2015.
- Mahmudov, N. I. Controllability and observability of linear stochastic systems in Hilbert spaces. Progress in Probability, Stochastic Analysis and Related Topics, Birkhauser, 151-167, 2003..
- Mahmudov, N. I.; Bashirov, A. E. First order and second order necessary conditions of optimality for stochastic systems. Statistics and control of stochastic processes (Moscow, 1995/1996), 283--295, World Sci. Publ., River Edge, NJ, 1997.
- Makhmudov, N. I. General necessary optimality conditions for stochastic systems with controllable diffusion. (Russian) Statistics and control of random processes (Russian) (Preila, 1987), 135--138, "Nauka", Moscow, 1989.