

CURRICULUM VITAE



A. BUTIR-BUTIR PERIBADI (<i>Personal Details</i>)				
Nama Penuh (<i>Full Name</i>)	Norazak Senu		Gelaran (<i>Title</i>): Prof Madya Dr	
No. MyKad / No. Pasport (<i>Mykad No. / Passport No.</i>) 710830-01-5479	Warganegara (<i>Citizenship</i>) Malaysia	Bangsa (<i>Race</i>) Melayu	Jantina (<i>Gender</i>) Lelaki	
Jawatan (<i>Designation</i>)	Prof Madya Dr	Tarikh Lahir (<i>Date of Birth</i>)	30 Ogos 1971	
Alamat Semasa (<i>Current Address</i>)		Jabatan/Fakulti (<i>Department/Faculty</i>)	E-mel dan URL (<i>E-mail Address and URL</i>)	
No. 21, Desa Makmur, Sg. Merab Luar, 43000 Kajang, Selangor. Tel: 89466848		Jabatan Matematik dan Statistik Fakulti Sains Tel: 89466848 Fax:	E-mail: norazak@upm.edu.my URL: H/P: 019 3097321	
B. KELAYAKAN AKADEMIK (<i>Academic Qualification</i>)				
Nama Sijil / Kelayakan (<i>Certificate / Qualification obtained</i>)	Nama Sekolah Institusi (<i>Name of School / Institution</i>)	Tahun (<i>Year obtained</i>)	Bidang pengkhususan (<i>Area of Specialization</i>)	
Doktor Falsafah	Universiti Putra Malaysia	2010	Analisis Berangka	
Master Sains	Universiti Putra Malaysia	2001	Analisis Berangka	
C. PEKERJAAN (<i>Employment</i>)				
Majikan / <i>Employer</i>	Jawatan / <i>Designation</i>	Jabatan / <i>Department</i>	Tarikh lantikan / <i>Start Date</i>	Tarikh tamat / <i>Date Ended</i>
UPM	Prof Madya Dr	Matematik dan Statistik	2014	sekarang
UPM	Ketua Laboratori Sains Berkomputasi dan Fizik Bermatematik	INSPEM	2018	2020
UPM	Pensyarah	Matematik	2001	2014
UPM	Tutor	Matematik	1999	2001
Kolej Unitek Malaysia	Pensyarah		1995	1999
D. ANUGERAH DAN HADIAH (<i>Honours and Awards</i>)				
Name of awards	Title	Award Authority	Award Type	Year
Academic Awards	Certificate of Excellent Service 2022	UPM	UPM	2022
	Gold Medal	The International Invention,	International	2017

		Innovation & Design Competition (IIID Johor 2017), Malaysia		
	2 Silver Medal at UPM Invention & Research Exhibition (PRPI) 2016	UPM	UPM	2016
	Anugerah PERSAMA 2011 (Kategori Tesis)	Persatuan Sains Matematik Malaysia	National	2011
	Gold Medal (4) Silver (2) Medal at UPM Invention & Research Exhibition 2010	UPM	UPM	2011
	Hadiah Saguhati Anugerah PERSAMA 2009 (Kategori Rekacipta)	Persatuan Sains Matematik Malaysia	National	2009
	Silver Medal (4) at UPM Invention & Research Exhibition 2010	UPM	UPM	2010
	Best Poster Presentation at Fundamental Science Congres (FSC2010)	UPM	Fakulti	2010
	Silver Medal (1) at UPM Invention & Research Exhibition (PRPI) 2009	UPM	UPM	2009
	Certificate of Excellent Service 2005	UPM	UPM	2005
	Gold Medal (1) at UPM Invention & Research Exhibition 2003	UPM	UPM	2003
	Bronze Medal (1) at UPM Invention & Research Exhibition 2002	UPM	UPM	2002
<i>Non-Academic Awards</i>	Anugerah Penyelidik Cemerlang INSPEM	INSPEM	UPM	2019
	Anugerah Prestasi Cemerlang INSPEM(jaringan Industri dan Masyarakat)	INSPEM	UPM	2019
	Anugerah Perkhidmatan Cemerlang Universiti Putra Malaysia 2016,2017	UPM	UPM	2016, 2017
	Anugerah Penyelidik Muda Cemerlang INSPEM 2014	UPM	UPM	2014
	Anugerah Perkhidmatan Cemerlang Universiti Putra Malaysia 2012	UPM	UPM	2012

	Anugerah Perkhidmatan Cemerlang Universiti Putra Malaysia 2005	UPM	UPM	2005
Awards of Merit	Certificate of merit for The 2011 IAENG International Conference on Scientific Computing	IAENG	International	2011

E SENARAI PENERBITAN (Sila masukan nama pengarang, tajuk, nama jurnal, jilid, muka surat dan tahun diterbitkan) (List of publications – author (s), title, journal, volume, page and year published)	
Journal	<p>Year 2024 [Q1: 3, Q2: 2, Q3: , SCOPUS:] 20.9</p> <ol style="list-style-type: none"> Joseph Raj Vikikal Joice Brainy, Samayan Narayanamoorthy, Samayan Kalaiselvan, Ranganathan Saraswathy, Ali Ahmadian, Norazak Senu, Jeonghwan Jeon, (2024), An augmented fuzzy decision support system to analyse compatible cosmetic face masks for various complexions, Expert Systems, IF: 3.3, Q2 KC Lee, R Nazar, N Senu, A Ahmadian, (2024), A promising exponentially-fitted two-derivative Runge–Kutta–Nyström method for solving $y''= f(x, y)$: Application to Verhulst logistic growth model, Mathematics and Computers in Simulation, 219, 28-49. IF: 4.6, Q1 (top10%) NA Syafiq, M Othman, N Senu, F Ismail, NAWA Hamid,(2024), A Parallel Fractional Explicit Group Modified AOR Iterative Method for Solving Fractional Poisson Equation with Multi-core Architecture, Journal of Parallel and Distributed Computing, 185, 104798. IF: 3.8, Q2 A Abdulsalam, N Senu, ZA Majid, NMAN Long,(2024), Development of high-order adaptive multi-step Runge–Kutta–Nyström method for solving special second-order ODEs, Mathematics and Computers in Simulation 216, 104-125. IF: 4.6, Q1 (top10%) MR Admon, N Senu, A Ahmadian, ZA Majid, S Salahshour,(2024), A new modern scheme for solving fractal-fractional differential equations based on deep feedforward neural network with multiple hidden layer, Mathematics and Computers in Simulation, 218, 311-333. IF: 4.6, Q1 (top10%) <p>Year 2023 [Q1: 8, Q2: 3, Q3: 1, SCOPUS: 4]45.262</p> <ol style="list-style-type: none"> NT Jaaffar, NIN Ismail, ZA Majid, N Senu, (2023), Direct Multistep Method for Solving Retarded and Neutral Delay Differential Equation with Boundary and Initial Value Problems. Malaysian Journal of Mathematical Sciences 17 (3), 413–424. Scopus NA Baharum, ZA Majid, N Senu, H Rosali,(2023), Diagonally Multistep Block Method for Solving Volterra Integro-differential Equation with Delay, Menemui Matematik (Discovering Mathematics) 45 (2), 208-223. Mycite F Alsidrani, A Kılıçman, N Senu, (2023), On the Modified Numerical Methods for Partial Differential Equations Involving Fractional Derivatives, Axioms 12 (9), 901. IF: 2.0, Q2 A.M.Shloof, A.Ahmadian, N.Senu, Soheil Salahshour, S.N.I.Ibrahim, M.Pakdaman, A Highly Accurate Artificial Neural Networks Scheme for Solving Higher Multi-Order Fractal-Fractional Differential Equations based on Generalized Caputo derivative, International Journal for Numerical Methods in Engineering, 124 (19), 4371-4404, IF: 3.021, Q2,

10. Mays Basim, Ali Ahmadian, **Norazak Senu** and Zarina Bibi Ibrahim,(2023) Numerical simulation of variable-order fractal-fractional delay differential equations with nonsingular derivative, *Engineering Science and Technology, an International Journal*, 42, 101412. **IF: 5.155, Q1.**
11. Lee Khai Chien, **Norazak Senu**, Ali Ahmadian, Mohd Almie Alias,(2023), On Efficient Frequency-Dependent Parameters of Explicit Two-Derivative Improved Runge-Kutta-Nystrom Method with Application to Two-Body Problem, *Alexandria Engineering Journal*, 72, 605-620, **IF: 6.626, Q1(top 10%).**
12. Musa Ahmed Demba, **Norazak Senu**, Higinio Ramos, and Wiboonsak Watthayu, (2023), A phase- and amplification-fitted 5(4) diagonally implicit Runge-Kutta-Nyström pair for oscillatory systems, *Bulletin of the Iranian Mathematical Society*, 49(24). **IF: 0.776, Q3** .
<https://doi.org/10.1007/s41980-023-00765-9>
13. M. Basim, **N. Senu**, A. Ahmadian, Z.B. Ibrahim, S. Salahshour, (2023), Solving fractional variable-order differential equations of the non-singular derivative using Jacobi operational matrix, *Journal of the Nigerian Society of Physical Sciences*, 5(2), 1221, **Scopus.**
14. **N Senu**, KC Lee, A Ahmadian, SNI Ibrahim, (2023), Efficient Frequency-Dependent Coefficients of Explicit Improved Two-Derivative Runge-Kutta Type Methods for Solving Third-Order IVPs, *Pertanika Journal of Science and Technology*, 31 (2): 843 - 873 (**scopus**)
15. Fahad Alsidrani,Adem Kılıçman· **Norazak Senu**,(2023), Approximate Solutions for Time-Fractional Fornberg–Whitham Equation with Variable Coefficients, *Fractal Fract.* 2023, 7(3), 260; <https://doi.org/10.3390/fractalfract7030260>. **IF: 3.577, Q1**
16. A M Shloof, **N Senu**, A Ahmadian, M I Nough and S Salahshour, (2023), A novel fractal-fractional analysis of the stellar helium burning network using extended operational matrix method, *Physica Scripta*, 98(3) 034004, **DOI 10.1088/1402-4896/acba5d. IF:3.081, Q2**
17. M Basim, **N Senu**, A Ahmadian, ZB Ibrahim, S Salahshour, (2023), An Effective Spectral Approach to Solving Fractal Differential Equations of Variable Order Based on the Non-singular Kernel Derivative, *Mathematics and Statistics* 11 (1), 149-159. **Scopus**
18. MR Admon, **N Senu**, A Ahmadian, ZA Majid, S Salahshour, (2023), A new efficient algorithm based on feedforward neural network for solving differential equations of fractional order, *Communications in Nonlinear Science and Numerical Simulation* 117, 106968. **IF: 4.186, Q1(Top 10%)**
19. MR Admon, **N Senu**, A Ahmadian, ZA Majid, S Salahshour, (2023), A new accurate method for solving fractional relaxation-oscillation with Hilfer derivatives, *Computational and Applied Mathematics* 42 (1), 1-33. **IF: 2.998, Q1**
20. Athraa Abdulsalam, **Norazak Senu**, Zanariah Abdul Majid, Nik Mohd Asri Nik Long, Adaptive multi-step Runge–Kutta–Nyström methods for general second-order ordinary differential equations, *Journal of Computational and Applied Mathematics* 421 (2023) 114874.
<https://doi.org/10.1016/j.cam.2022.114874>. **IF: 2.872, Q1**
21. MA Demba, H Ramos, P Kumam, W Watthayu, **N Senu**, I Ahmed (2023), A trigonometrically adapted 6 (4) explicit Runge–Kutta–Nyström pair to solve

oscillating systems, *Mathematical Methods in the Applied Sciences*, 46(1), 560-578. <https://doi.org/10.1002/mma.8528>. **IF:3.007. Q1**

22. AM Shloof, **N Senu**, A Ahmadian, M Pakdaman, S Salahshour, (2023), A new iterative technique for solving fractal-fractional differential equations based on artificial neural network in the new generalized Caputo sense, *Engineering with Computers*, 39, 505-515. **IF: 7.963, Q1(10%)**

Year 2022

23. **N Senu**, KC Lee, A Ahmadian, SNI Ibrahim, (2022), Numerical solution of delay differential equation using two-derivative Runge-Kutta type method with Newton interpolation, *Alexandria Engineering Journal* 61 (8), 5819-5835. <https://doi.org/10.1016/j.aej.2021.11.009> IF: 3.732, **Q1**

24. **N Senu**, NA Ahmad, M Othman, ZB Ibrahim (2022), Numerical study for periodical delay differential equations using Runge–Kutta with trigonometric interpolation, *Computational and Applied Mathematics* 41 (1), 1-20. IF: 2.239. **Q1**

25. Mays Basim, **Norazak Senu**, Zarina Bibi Ibrahim, Ali Ahmadian, Soheil Salahshour, (2022), A Robust Operational Matrix Of Nonsingular Derivative To Solve Fractional Variable-Order Differential Equations, *Fractals*, Vol. 30, No. 1, 2240041 (14 pages). DOI: 10.1142/S0218348X22400412. IF: 3.665. **Q1**

26. Rohul Amin, **Norazak Senu**, Muhammad Bilal Hafeez, Noreen Izza Arshad, Ali Ahmadian, Soheil Salahshour, Wojciech Sumelka (2022), A Computational Algorithm For The Numerical Solution Of Nonlinear Fractional Integral Equations, *Fractals*, Vol. 30, No. 1 (2022) 2240030 (8 pages). DOI: 10.1142/S0218348X22400308. IF: 3.665. **Q1**

27. Qu Haidong, Mati Ur Rahman, Muhammad Arfan, Ghaylen Laouini, Ali Ahmadian, **Norazak Senu**, Soheil Salahshour, (2022), Investigating Fractal-Fractional Mathematical Model of Tuberculosis (TB) under Fractal-Fractional Caputo Operator, *Fractals*, <https://doi.org/10.1142/S0218348X22401260>. IF: 3.665. **Q1**

28. JC Zhou, S Salahshour, A Ahmadian, **N Senu**, (2022), Modeling the dynamics of COVID-19 using fractal-fractional operator with a case study, *Results in Physics*, 33, 105103. <https://doi.org/10.1016/j.rinp.2021.105103>. IF: 4.476. **Q2**

29. Bagh Ali, Imran Siddique, Ali Ahmadian, **Norazak Senu**, Liaqat Ali, (2022), Significance of Lorentz and Coriolis forces on dynamics of water based silver tiny particles via finite element simulation, *Ain Shams Engineering Journal*, Volume 13, Issue 2, March 2022, 101572. <https://doi.org/10.1016/j.asej.2021.08.014>. IF: 3.180. **Q2**

30. AM Shloof, **N Senu**, A Ahmadian, M Pakdaman, S Salahshour, (2022), A new iterative technique for solving fractal-fractional differential equations based on artificial neural network in the new generalized Caputo sense, *Engineering with Computers*, 1-11. IF: 7.963, **Q1(10%)**

31. AM Shloof, **N Senu**, A Ahmadian, NMAN Long, S Salahshour, (2022), Solving fractal-fractional differential equations using operational matrix of derivatives via Hilfer fractal-fractional derivative sense, *Applied Numerical Mathematics*, IF: 2.468, **Q1**

Year 2021

32. Arijit Dey, Soham Chattopadhyay, Pawan Kumar Singh, AliAhmadian, Massimiliano Ferrara, **Norazak Senu** & Ram Sarkar, (2021) MRFGR0: a hybrid meta-heuristic feature selection method for screening COVID-19 using deep features, *Scientific Reports*, 11:24065. <https://doi.org/10.1038/s41598-021-02731-z>. IF: 4.380. **Q1**
33. Athraa Abdulsalam, **Norazak Senu**, and Zanariah Abdul Majid, (2021), Two-step RKN Direct Method for Special Second-order Initial and Boundary Value Problems, *IAENG International Journal of Applied Mathematics*, 51:3. **Scopus**
34. Najeeb Alam Khan, Oyoon Abdul Razzaq, Fatima Riaz, Ali Ahmadian, **Norazak Senu**, (2021), Dynamics of fractional order nonlinear system: A realistic perception with neutrosophic fuzzy number and Allee effect, *Journal of Advanced Research*, Volume 32, September 2021, Pages 109-118. <https://doi.org/10.1016/j.jare.2020.11.015>. IF: 10.479. **Q1**
35. N. Dinh Phu, N. Nhut Hung, A. Ahmadian, S. Salahshour, **N. Senu**, (2021), Geometric picture fuzzy numbers and three-dimensional copulas with the non-linear programming approach, *Journal of Intelligent & Fuzzy Systems*, 40(1), 1-12. IF: 1.851 **Q3**
36. NT Jaaffar, ZA Majid, **N Senu** (2021), Solving the singularly perturbation problems of delay differential equations numerically, *International Journal of Mathematics and Computer Science*, 16 (3), 1003-1016. **Scopus**
37. KB Hamzah, NMA Nik Long, **N Senu**, ZK Eshkuvatov, (2021), Numerical Solution for Crack Phenomenon in Dissimilar Materials under Various Mechanical Loadings, *Symmetry* 13 (2), 235. IF: 2.713, **Q2**
38. K.B. Hamzah, N.M.A.N. Long, **N. Senu**, Z.K. Eshkuvatov, (2021), Numerical solution for the thermally insulated cracks in bonded dissimilar materials using hypersingular integral equations, *Applied Mathematical Modelling*, 91, 358-373. IF: 5.129, **Q1**.
39. KB Hamzah, NMAN Long, **N Senu**, ZK Eshkuvatov, (2021), Mode Stresses for a Thermally Insulated Curve Crack in Bonded Two Half Planes, *Menemui Matematik (Discovering Mathematics)* 42 (1), 34-44. Mycite.
40. A Garain, B Ray, PK Singh, A Ahmadian, **N Senu**, R Sarkar, (2021), GRANet: A Deep Learning Model for Classification of Age and Gender from Facial Images, *IEEE Access*, 9, 85672-85689. DOI: 10.1109/ACCESS.2021.3085971, IF: 3.367, **Q2**.
41. K.C. Lee, **N. Senu**, A. Ahmadian, S.N.I. Ibrahim, (2021), High-order exponentially fitted and trigonometrically fitted explicit two-derivative Runge-Kutta-type methods for solving third-order oscillatory problems, *Mathematical Sciences*, 1-17. IF: 1.986, **Q1**.
42. A.M. Shloof, **N. Senu**, A. Ahmadian, S. Salahshour, (2021) An efficient operation matrix method for solving fractal-fractional differential equations with generalized Caputo-type fractional-fractal derivative, *Mathematics and Computers in Simulation* 188, 415-435. IF: 2.463, **Q3**.
43. A Ullah, A Khan, A Ahmadian, **N Senu**, F Karaaslan, I Ahmad, (2021), Fuzzy congruences on AG-group [J], *AIMS Mathematics* 6 (2), 1754-1768. IF: 0.882, **Q2**
44. **N. Senu**, K.C. Lee , W.F. Wan Ismail , A. Ahmadian, and S.N.I. Ibrahim, (2021), Improved Runge-Kutta Method with Trigonometrically-fitting Technique for

Solving Oscillatory Problem, Malaysian Journal of Mathematical Sciences, 15(2), 253-266, Scopus

45. **Norazak Senu**, Nur Amirah Ahmad, Zarina Bibi Ibrahim And Mohamed Othman, (2021), Numerical Study On Phase-Fitted and Amplification-Fitted Diagonally Implicit Two Derivative Runge-Kutta Method For Periodic Ivps, Sains Malaysiana, Sains Malaysiana 50 (6), 1799-1814 IF : 0.643, **Q4**
46. Debarati Dey, Ali Ahmadian, **Norazak Senu**, (2021), Electrically Doped Nano-scale Devices using First Principle Approach: A Comprehensive Survey, Nanoscale Research Letters, 16 (1), 1-16. IF: 3.125, **Q1**.

Year 2020

47. NA Khan, OA Razzaq, F Riaz, A Ahmadian, **N Senu**, (2020), Dynamics of fractional order nonlinear system: A realistic perception with neutrosophic fuzzy number and Allee effect, NA Khan, OA Razzaq, F Riaz, A Ahmadian, N Senu, Journal of Advanced Research, IF: 6.992, **Q1**, <https://doi.org/10.1016/j.jare.2020.11.015>
48. NDM Rusdi, NFM Mokhtar, **N Senu**, SSPM Isa, (2020), Stability Convection in a Couple Stress Fluid Saturated in an Anisotropic Porous Medium with Internal Heating Effect, Journal of Advanced Research in Fluid Mechanics and Thermal Sciences , 76(2), 75-84. Scopus, <https://doi.org/10.37934/arfmts.76.2.7584>
49. YM Chu, R Ali, MI Asjad, A Ahmadian, **N Senu**, (2020), Heat transfer flow of Maxwell hybrid nanofluids due to pressure gradient into rectangular region, Scientific Reports 10 (1), 1-18, IF: 3.998, **Q1**
50. KC Lee, **N Senu**, A Ahmadian, SNI Ibrahim, D Baleanu, (2020), Numerical study of third-order ordinary differential equations using a new class of two derivative Runge-Kutta type methods, *Alexandria Engineering Journal*, (2020), In Press. IF: 3.696. **Q1**
51. S Guha, A Das, PK Singh, A Ahmadian, **N Senu**, R Sarkar, (2020), Hybrid feature selection method based on harmony search and naked mole-rat algorithms for spoken language identification from audio signals, IEEE Access 8, 182868-182887, IF: 3.745, **Q1**
52. MY Turki, F Ismail, **N Senu**, ZB Ibrahim, (2020), Direct integrator of block type methods with additional derivative for general third order initial value problems, *Advances in Mechanical Engineering* 12 (10), 1687814020966188, IF: 1.161, **Q4**
53. A Das, S Guha, PK Singh, A Ahmadian, **N Senu**, R Sarkar, (2020), A hybrid meta-heuristic feature selection method for identification of Indian spoken languages from audio signals, IEEE Access 8, 181432-181449, IF: 3.745, **Q1**
54. ND Phu, NN Hung, A Ahmadian, **N Senu**, (2020), A New Fuzzy PID Control System Based on Fuzzy PID Controller and Fuzzy Control Process, *International Journal of Fuzzy Systems* 22 (7), 2163-2187, IF:4.406, **Q1**
55. KB Hamzah, NMAN Long, **N Senu**, ZK Eshkuvatov, (2020), Stress intensity factors for bonded two half planes weakened by thermally insulated cracks, *Acta Mechanica* 231 (10), 4157-4183
56. B Debnath, JC Das, D De, F Ghaemi, A Ahmadian, **N Senu**, Reversible Palm Vein Authenticator Design With Quantum Dot Cellular Automata for Information Security in Nanocommunication Network, IEEE Access 8, 174821-174832, IF: 3.745, **Q1**

57. K Hamzah, NMA Nik Long, **N Senu**, Z Eshkuvatov, (2020), Stress Intensity Factors for Crack Problems in Bonded Dissimilar Materials. *Journal of Engineering & Technological Sciences* 52 (5) (Scopus)
58. KB Hamzah, NMAN Long, **N Senu**, ZK Eshkuvatov, (2020), Mode Stresses for a Thermally Insulated Curve Crack in Bonded Two Half Planes, *Discovering Mathematics (Menemui Matematik)* 42 (1), 34-44
59. MY Turk, F Ismail, , (2020), Extra Derivative Implicit Block Methods for Integrating General Second Order Initial Value Problems. *Pertanika Journal of Science & Technology* 28 (3), (scopus)
60. NT Jaaffar, Z Abdul Majid, **N Senu**, (2020), Numerical Approach for Solving Delay Differential Equations with Boundary Conditions, *Mathematics* 8 (7), 1073, IF: 1.747, Q1
61. M Salih, F Ismail, **N Senu**, (2020), Phase Fitted And Amplification Fitted Of Runge-Kutta-Fehlberg Method Of Order 4 (5) For Solving Oscillatory Problems, , *Baghdad Science Journal* 17 (2 (SI)), 0689-0689. Scopus
62. K.C. Lee, **N. Senu**, A. Ahmadian, S.N.I. Ibrahim, (2020), On Two-Derivative Runge-Kutta Type Methods for Solving $u'''=f(x,u(x))$ with Application to Thin Film Flow Problem, *Symmetry*(2020), 12 (6), 924. I.F: 2.143. Q2
63. NIN Ismail, ZA Majid, **N Senu**, (2020), Hybrid multistep block method for solving neutral delay differential equations, *Sains Malaysiana* 49 (4), 929-940, IF : 0.643,Q4
64. K.B. Hamzah, N.M.A.N. Long, **N. Senu**, Z.K. Eshkuvatov, (2020), Stress intensity factor for bonded dissimilar materials weakened by multiple cracks, *Applied Mathematical Modelling*, (2020), 77, 585-601. I.F: 2.841. Q1
65. HM Ijam, ZB Ibrahim, ZA Majid, **N Senu**, (2020), Stability analysis of a diagonally implicit scheme of block backward differentiation formula for stiff pharmacokinetics models, *Advances in Difference Equations* **2020**, 400 (2020). <https://doi.org/10.1186/s13662-020-02846-z> IF: 2.461, Q1
66. NIN Ismail, ZA Majid, **N Senu**, (2020), Hybrid Multistep Block Method for Solving Neutral Delay Differential Equations, , *Sains Malaysiana* 49 (4), 929-940, IF: 0.643, Q4
67. M. Rahaman, S.P. Mondal, A.A. Shaikh, A. Ahmadian, **N. Senu**, S. Salahshour, (2020), Arbitrary-order economic production quantity model with and without deterioration: generalized point of view, *Advances in Difference Equations* 2020 (1), 16. I.F: 1.510. Q1
68. Syed Mahamud Hossein, Debashis De, Pradeep Kumar Das Mohapatra, Sankar Prasad Mondal, Ali Ahmadian, Ferial Ghaemi, **Norazak Senu**, (2020), DNA Sequences Compression by GP^2 R and Selective Encryption Using Modified RSA Technique, *IEEE Access*(2020), 8, 76880-76895. I.F: 4.098. Q1

Year 2019

69. Mohammed Yousif Turki, Fudziah Ismail, **Norazak Senu**, and Zarina Bibi Ibrahim, Two and Three point Implicit Second Derivative Block Methods For Solving First Order Ordinary Differential Equations, *ASM Sc. J.*, 12, Special Issue 1, 2019 for IQRAC2018, 10-23

70. Nur Inshirah Naqiah Ismail, Zanariah Abdul Majid , and **Norazak Senu**, ASM Explicit Multistep Block Method for Solving Neutral Delay Differential Equation Sc. J., 12, Special Issue 1, 2019 for IQRAC2018, 24-32
71. Nur Amirah Ahmad, **Norazak Senu**, Zarina Bibi Ibrahim, and Mohamed Othman, Trigonometrically-Fitted Diagonally Implicit Two Derivative Runge-Kutta method for the Numerical Solution of Periodical IVPs, ASM Sc. J., 12, Special Issue 1, 2019 for IQRAC2018, 50-59
72. N. R. F. Elfakhakhre, N. M. A. Nik long, Z. K. Eshkuvatov, and **N. Senu**, Numerical Solution for Circular Arc Cracks in Half Plane Elasticity ASM Sc. J., 12, Special Issue 1, 2019 for IQRAC2018, 82-91
73. NA Ahmad, **N Senu**, F Ismail, Trigonometrically-fitted higher order two derivative Runge-Kutta method for solving orbital and related periodical IVPs, Hacettepe Journal of Mathematics and Statistics 48 (5), 1312-1323 I.F: 0.604. Q3
74. Avishek Chakraborty , Sankar Prasad Mondal ,Shariful Alam , Ali Ahmadian , **Norazak Senu** , Debashis De and Soheil Salahshour, The Pentagonal Fuzzy Number:Its Different Representations, Properties, Ranking, Defuzzification and Application in Game Problems, *Symmetry* (2019), 11(2), 248; I.F 1.256, Q2. <https://doi.org/10.3390/sym11020248>
75. Athraa Salam, **Norazak Senu**, Zanariah Abdul Majid, Direct One-Step Method For Solving Third-Order Boundary Value Problems,A Abdulsalam, N Senu, ZA Majid, International Journal of Applied Mathematics 32 (2), 155-176(2019), Scopus
76. **Norazak Senu**, Nur Amirah Ahmad, Zarina Bibi Ibrahim, Mohamed Othman, Diagonally Implicit Two Derivative Runge-Kutta Methods for Solving First Order Initial Value Problems, *Journal of Abstract and Computational Mathematics* (2019), 4(1), pp:018-36.
77. K.B. Hamzaha,d, N.M.A. Nik Longa, **N. Senu**, Z.K. Eshkuvatov, Stress intensity factor for multiple cracks in bonded dissimilar materials using hypersingular integral equations, *Applied Mathematical Modelling* 73 (2019) 95–108, I.F: 2.617, Q1. <https://doi.org/10.1016/j.apm.2019.04.002>
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Other publications	
Computer software	

F. PROJEK PENYELIDIKAN TERDAHULU (Past Research Project)					
Project No.	Project Title	Role	Year	Source of fund	Status
GPI/2023/97 65400 RM16000	Adaptive Multi-step Runge-Kutta-Nyström methods for integrating general second-order ordinary differential equations	Project leader	1 Dis 2023 – 30 Nov 2025	UPM	Ongoing
FRGS/1/2022 /STG06/UPM/ 02/2 RM70000	A Novel Artificial Neural Network Algorithm for Solving Fractional-Order Pandemic Model	Project leader	1 Septemb er 2022 – 31 August 2024 (Ongoing)	FRGS	Ongoing
GP- IPS/2022/971 6200 RM13500	Higher-order Multi-step Runge-Kutta-Nyström methods for integrating general second-order ordinary differential equations	Project leader	1 July 2022 - 30 June 2024 (Ongoing)	GP-IPS	Comple ted
GPI/2022/97 16200 RM6000	Gran Putra Insentif(GPI) 2021	Project leader	2022-2023 (Ongoing)	GPI	Ongoing

M16,847.65	Gran Putra Insentif(GPI) 2020	Project leader	2021-2023 (Ongoing)	GPI	Completed
FRGS/1/2018 /STG06/UPM/02/2 RM94000	Solution of Time Bloch Equations under Type-2 Fuzzy Differentiability by Fuzzy Laplace Transforms	Project leader	2014-2017	FRGS	Completed
ERGS/1/2013 /STG06/UPM/02/4 RM88000	A Legendre tau for Solving Fractional Dynamical Systems with Uncertainty	Project leader	2013	Exploratory Research Grant Scheme (ERGS)	Completed
01-07-10-917FR RM52800	Embedded Diagonally Implicit Runge-Kutta-Nystrom Methods for Solving Oscillatory Problems.	Project leader	2010	FRGS	Completed
05-01-10-0900RU RM56000	High Order Embedded Explicit Runge-Kutta-Nystrom Methods for Solving Periodic Initial Value Problems	Project leader	2010	RUG	Completed
05-10-07-385FR	Diagonally Implicit Runge-Kutta-Nystrom Methods with Maximized Stability Domain for Solving Structural Dynamics Problems	Co-researcher	2007	FRGS	Completed
01-11-09-721FR	Two Step Hybrid Methods for Solving Special Second Order Ordinary Differential Equations.	Co-researcher)	2009	FRGS	Completed
04-01-04-SF0024	Runge-Kutta-Nystrom Method for Solving Higher Order Ordinary and Delay Differential Equations Directly	Co-researcher		Science fund	Completed
01-19-03-101J	Embedded Diagonally Implicit Runge-Kutta Methods for Solving Initial Value Problem in Parallel	Co-researcher	2005	FRGS	Completed

G. PENYELIAAN PELAJAR PASCA KEDOKTORAN (Post graduate Supervision)				
No	Name	Phd/MSc	Year Graduated	Title
1	Mohd Rashid bin Admon	PhD	2024	Feedforward Neural Network For Solving Particular Fractional Differential Equations
2	Shloof Aml Melad Asan	PhD	2024	Operational Matrix Based On Orthogonal Polynomials And Artificial Neural Networks Methods For Solving Fractal-Fractional Differential Equations
3	Alabdal Mays Basim Nasih	PhD	2023	Operational Matrix Methods For Solving Fractal-Fractional Differential Equations Of Constant And Variable Orders
4	Lee Khai Chien	PhD	2022	Construction and Analysis of Explicit Two-Derivative Runge-Kutta Type Methods for Solving Third-Order

				Ordinary and Delay Differential Equations
5	Nur Amirah Ahmad (Main Supervision)	PhD	2021	Diagonally Implicit Two and Three Derivative Runge-Kutta Methods For Solving First Order Oscillatory Ordinary and Delay Differential Equations
6	Tahani Mohamed Salama (Main Supervision)	PhD	2019	Two Derivative and Three Derivative Runge-Kutta-Nystrom Methods for Second-order Ordinary Differential Equations
7	Nizam Ghannam Fayez Ghawadri (Main Supervision)	PhD	2018	Runge-Kutta Type Methods for Solving High-order Ordinary Differential Equations
8	Athraa Abdulsalam Jasim Al-Ithawi (Main Supervision)	MSc	2019	Runge-Kutta Type Methods for Solving Second and Third Order Boundary Value Problems
9	Firas Adel Fawzi Alshareeda (Main Supervision)	PhD	2017	Runge-Kutta Type Methods for Solving Third-order Ordinary Differential Equations and First-order Oscillatory Problems
10	Nur Amirah Ahmad (Main Supervision)	MSc	2017	Explicit Two Derivative and Three Derivative Runge-Kutta Methods for First-order Ordinary Differential Equations
11	Musa Ahmed Demba (Main Supervision)	MSc	2016	Trigonometrically-fitted Explicit Runge-Kutta-Nystrom Methods for Solving Special Second Order Ordinary Differential Equations with Periodic Solutions
12	Munirah Mohamad (Main Supervision)	MSc	2013	Explicit Runge-Kutta-Nystrom Methods With High Order Dispersion And Dissipation For Solving Oscillatory Second Order Ordinary Differential Equation