

Curriculum Vitae

Personal DATA

Name	Osama Hasan Salman Ala'yed
Date of Birth	03/08/1986
Place of Birth	Saudi Arabia
Nationality	Jordanian
Contact Address	Department of Mathematics, Faculty of Science and Information Technology, Jadara University, Jordan
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Field of Specialization:

Mathematics, Applied Mathematics

Academic Qualifications

1. Ph. D. in mathematics, Universiti Utara Malaysia (UUM), Malaysia, 11/2016. Title of Thesis: New Spline Methods for Solving First and Second Order Ordinary Differential Equations. Advisors: Assistant Professor Dr. Teh Yuan Ying and Associate Professor Dr. Azizan Saaban.
2. M.Sc. in Mathematics, Jordan University of Science and Technology (JUST), Jordan, 6/2011. Title of Thesis: An Efficient Algorithm for the Solution of Bratu-Type Equation Using Cubic Spline Method. Advisor: Professor Mohammad H. Al-Towaiq.
3. B.Sc. in Mathematics, Mu'tah University, Jordan. 8/2007.

Academic Positions Held:

1. Assistant Professor, Department of Mathematics, Faculty of Science and Information Technology, Jadara University, Jordan (10/2017-Present).
2. Teaching Assistant, School of Quantitative Sciences, College of Arts and Sciences, Universiti Utara Malaysia, Malaysia (2/2015 - 6/2015).
3. Instructor, Department of Basic Sciences, King Saud University/ PY, Saudi Arabia, (10/2011-1/2013).
4. Teacher, Jordanian Ministry of Education, Jordan (10/2007-10/2011).

Courses Taught

Theory of Ordinary Differential Equations (**Graduate**), Methods in Applied Mathematics (**Graduate**), Ordinary Differential Equations I-II, Partial Differential Equations I, Number Theory, Numerical Analysis I, Euclidean and Non-Euclidean Geometry, Linear Algebra, Mathematical Methods, Pre-Calculus, Calculus I-III, Intermediate Analysis, Foundation of Mathematics, Logic and Set Theory, Mathematics for Economists, and Statistic for Economists.

List of Training Courses

1. M101: A First Course in *MATHEMATICA* / Jordan University of Science and Technology.
2. Data Analysis and Academic Writing: Do it Right / Universiti Utara Malaysia.
3. Modern Teaching Strategies / Jadara University.
4. Statistical Analysis Using SPSS / Jadara University.

5. Stem Early Career Academics in Jordanian Universities (Workshop 3: Civic Engagement)/ British Council.
6. Stem Early Career Academics in Jordanian Universities (Workshop 4: Leadership and Management) / British Council.
7. Supporting the digital transformation in Jordan's Higher Education Sector (Workshop 1: Introduction to Experiential Online Learning) / British Council.
8. Supporting the digital transformation in Jordan's Higher Education Sector (Workshop 2: Online Engagement and Curriculum Design) / British Council.
9. Supporting the digital transformation in Jordan's Higher Education Sector (Workshop 3: Online Engagement and Assessments) / British Council.
10. International Symposium on Creative Teaching in Arab Societies/ARID Platform.
11. Master's Thesis Workshop/ Jadara University (Presenter).

Research:

Research Publications:

1. Al-Towaiq, M., & **Ala'yed, O.** (2014). An Efficient Algorithm based on the Cubic Spline for the Solution of Bratu-Type Equation. *Journal of Interdisciplinary Mathematics*, 17(5-6), 471-484.
2. **Ala'yed, O.**, Ying, T. Y., & Saaban, A. (2016). Quintic Spline Method for Solving Linear and Nonlinear Boundary Value Problems. *Sains Malaysiana*, 45(6), 1007–1012.
3. **Ala'yed, O.**, Ying, T. Y., & Saaban, A. (2015). New Fourth Order Quartic Spline Method for Solving Second Order Boundary Value Problems. *MATEMATIKA*, 31(2), 149-157.
4. **Ala'yed, O.**, Batiha, B., Abdelrahim, R., & Jawarneh, A. (2019). On the Numerical Solution of the Nonlinear Bratu Type Equation Using Quintic B-Spline Method. *Journal of Interdisciplinary Mathematics*, DOI: [10.1080/09720502.2019.1624305](https://doi.org/10.1080/09720502.2019.1624305)
5. Abdelrahim, R., Omar, Z., **Ala'yed, O.** & Batiha, B. (2019). Hybrid third derivative block method for the solution of general second order initial value problems with generalized one step point. *European Journal of Pure and Applied Mathematics*, 12(3), 1199-1214.
6. Al-khateeb, A., Zureigat, H., **Ala'yed, O.**, Bawaneh, S. (2021). Ulam–Hyers Stability and Uniqueness for Nonlinear Sequential Fractional Differential Equations Involving Integral Boundary Conditions. *Fractal Fract.* 5, 235, DOI: <https://doi.org/10.3390/fractalfract5040235>
7. Saadeh, R., **Ala'yed, O.**, & Qazza, A. (2022). Analytical Solution of Coupled Hirota–Satsuma and KdV Equations. *Fractal and Fractional*, 6(12), 694.
8. **Ala'yed, O.**, Batiha, B., Alghazo, D., & Ghanim, F. (2023). Cubic B-Spline method for the solution of the quadratic Riccati differential equation. *AIMS Math*, 8, 9576-9584.
9. **Ala'yed, O.**, Ying, T. Y., & Saaban, A. (2022). Quintic Non-polynomial Spline Method for Solving Second Order Boundary Value Problems with Dirichlet and Neumann Boundary Conditions. Manuscript Submitted for Revisions.
10. Batiha, B., Ghanim, F., **Alayed, O.**, Hatamleh, R. E., Heilat, A. S., Zureigat, H., & Bazighifan, O. (2022). Solving Multispecies Lotka–Volterra Equations by the Daftardar-Gejji and Jafari Method. *International Journal of Mathematics and Mathematical Sciences*, 2022.
11. **Ala'yed, O.**, Ying, T. Y., & Saaban, A. (Accepted). New Fourth Order Non-Polynomial Spline Method for Solving Second Order Boundary Value Problems.
12. Ahmad Qazza; Rania Saadeh; Osama Ala'yed (2022). Effective Transform-Expansions Algorithm for Solving Nonlinear Fractional Multi-Pantograph System. Manuscript Submitted for Revisions.

Research Conferences:

1. **Ala'yed, O.**, Ying, Y. T., & Saaban, A. (2013). Algorithm for the Solution of Bratu-Type Equation Based on Quintic Spline Method. *1st Innovation and Analytics Conference and Exhibition (IACE) 2013*. UUM.
2. **Ala'yed, O.**, Ying, T. Y., & Saaban, A. (2015, December). Numerical Solution of First Order Initial Value Problem Using Quartic Spline Method. In *2nd Innovation and Analytics Conference & Exhibition* (Vol. 1691, p. 040003). AIP Publishing.
3. Atiany, T. A. M., Alawneh, J. J., **Ala'yed, O.**, & Al-Okaily, M. (2023). Investigating the influence of COVID-19 pandemic on Global Currency Exchange. European, Asian, Middle Eastern, North African Conference on Management and Information Systems (EAMMIS).
4. **Ala'yed, O.** (2023, January). Numerical Treatment of General Third Order Boundary Value Problems via B-Spline Method. In *MUAJ-EMJ 1st International Conference on Asian Studies Proceeding ICAS'2023* (Vol. 1, No. 1).

Other Academic Achievements

1. Supervising graduate and undergraduate students in conducting research.
2. Chairing a session at the *2nd Innovation and Analytics Conference & Exhibition*. (2015, December).
3. Certificate of appreciation from the Faculty of Science and Information Technology, Jadara University in recognition of outstanding achievements and professionalism in education in the academic year 2018/2019.

Book Chapter

1. Atiany, T.A.M., Alawneh, J.J., Ala'yed, O., Al-Okaily, M. (2023). Investigating the Influence of COVID-19 Pandemic on Global Currency Exchange. In: Musleh Al-Sartawi, A.M.A., Razzaque, A., Kamal, M.M. (eds) *From the Internet of Things to the Internet of Ideas: The Role of Artificial Intelligence*. EAMMIS 2022. Lecture Notes in Networks and Systems, vol 557. Springer, Cham. https://doi.org/10.1007/978-3-031-17746-0_45

Research Interests

My general research interests are in the areas of applied mathematics, Approximation theory, and the differential equations of applied mathematics. More specifically, my current research interests include these topics:

1. Numerical Analysis of Ordinary and Partial Differential Equations,
2. Approximate Solution of Differential Equations,
3. Spline Methods and Their Numerical Analysis.