

## Curriculum vitae

### **Personal Information:**

Name: Prof. Dr. Waqed H. Hassan

Date & Place of Birth : 1976 – Kerbala - (Iraq)

Nationality : Iraqi

Marital Status : married



Work position: Scientific Vice of President at the University of Warith Al-Anbiyya , Kerbala, Iraq

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 Scholar : Waqed hammed Hassan

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- Ph.D. in *Water Resources Engineering*, 2013, University of Al-Mustansarya, Iraq.
- M.Sc. in *Water Resources Engineering*, 2002, University of Babylon, Iraq.
- B.Sc. in *Civil Engineering*, 1999, University of Babylon, Iraq.
- IHE Delft Institute for Water Management Education / University of Delft - The Netherlands (8-16) November-2021.
- International Academy of Sciences, Engineering and Technology. London - United Kingdom of Great Britain; March 2018 a training course for applications in civil engineering, in addition to participating in research in the Academy Conference.
- Germany, Tholand Foundation for Engineering and the Environment. The German city of Mannheim; May 2014 A training course on the study and operation of odor removal systems in wastewater treatment plants.
- Al Balqa Applied University; Jordan; April 2007, short course training on soil sampling, water management and modern irrigation techniques.
- Al Balqa Applied University; Jordan; December 2007, short course training on technical training on techniques for the planning, management and, distribution of water resources and evaluation of environment impact”.

### **Posts Title**

- Scientific Vice of President of Warith Al-Anbiyaa University from 1/8/2023 until now.
- Dean of the Engineering College at the University of Warith Al-Anbiyaa from 15/11/2022 to 1/8/2023. Chairman of the Central Academic Promotion and Support Committee at Karbala University from 10/22/2020 to 15/11/2022.
- Head of Civil Engineering Department / University of Kerbala from 6/7/2015 to 12/11/2019.
- Assistant Director of the Engineering Consulting Office / University of Kerbala from 12/1/2014 to 6/8/2015.
- Member of the Board of Directors of the Engineering Consulting Office / University of Kerbala from 29/8/2013 to 13/1/2016.
- Head of the research team at the University of Kerbala to implement the memorandum between the University of Kerbala and the Netherlands Wageningen University 2020 (the completion and publication of the number of research in prestigious international journals) until now.

### **Scientific Webs:**

1. **Google Scholar:** [https://scholar.google.com/citations?user=\\_SjPQgoAAAAJ&hl=en](https://scholar.google.com/citations?user=_SjPQgoAAAAJ&hl=en).
2. **Research Gate:** [https://www.researchgate.net/profile/Waqed\\_Al-Mussawi](https://www.researchgate.net/profile/Waqed_Al-Mussawi).
3. **Scopus:** <https://www.scopus.com/authid/detail.uri?authorId=57196370431>.
4. **Publons:** <https://publons.com/researcher/1728704/waqed-hammed-hassan/>.

### **Global Scientific Indicators:**

- H-Index for Google scholar =22, Citations: 1100
- H-Index for Scopus =18, Citations: 581

### **Fields of Activity:**

- *Water Resources System analysis*
- *Water Resource Management*
- *Climate Change*
- *Optimization*
- *Hydraulic Engineering*
- *Stormwater & west water Networks*
- *Hydrology*

- *Groundwater*
- *Numerical Modeling for Hydraulic & Environmental Problems*

### **Papers published**

- Publishing more than 80 applied scientific research in the most important international scientific journals in the field of civil engineering water resources management, which are indexed within the databases in Scopus and Clarivate and issued by various international publishing houses such as (Springer Nature, Taylor & Francis, MDPI, Elsevier) and others.
  - Scientific reviewer for more than 200 scientific papers for a group of international scientific journals issued by reputable international publishing houses and local journals.
1. Hassan, W.H., Nile, B.K., Kadhim, Z.K., Mahdi, K., Riksen, M. and Thiab, R.F., 2023. **Trends, forecasting and adaptation strategies of climate change in the middle and west regions of Iraq**. SN Applied Sciences, 5(12), p.312.
  2. Hassan, W.H., Nile, B.K. and Zwain, H.M., 2023. **Simulation-Optimization Approach for Optimal Cut-Off Design Under the Hydraulic Structure**. Geotechnical and Geological Engineering, pp.1-14.
  3. Faisal, A.A., Taha, D.S., Hassan, W.H., Lakhera, S.K., Ansar, S. and Pradhan, S., 2023. **Subsurface flow constructed wetlands for treating of simulated cadmium ions-wastewater with presence of Canna indica and Typha domingensis**. Chemosphere, 338, p.139469.
  4. Hassan, W.H., Hussein, H.H., Khashan, D.H. and Nile, B.K., 2023. **Optimum hydraulic design of cut-off under hydraulic structures using the simulation-optimization method**. Modeling Earth Systems and Environment, 9(1), pp.493-505.
  5. Hassan, W.H. and Zwain, H.M., 2024. **The influence of drain pipe location and diameter on seepage through an earth dam**. Ain Shams Engineering Journal, 15(3), p.102475.
  6. Rashid, H.M., Abdul-Kareem, M.B., Jassam, S.H., Hassan, W.H., Faisal, A.A., Ghfar, A.A. and Al-Ansari, N., 2023. **Novel material from immobilization of magnesium oxide and cetyl trimethyl ammonium bromide nanoparticles onto waterworks sludge for removing methylene blue from aqueous solution**. Journal of King Saud University-Science, p.102751.
  7. Hassan, W.H., 2021. **Climate change projections of maximum temperatures for southwest Iraq using statistical downscaling**. *Climate Research*, 83, pp.187-200.
  8. Hassan, W.H., Ghanim, A.A., Mahdi, K., Adham, A., Mahdi, F.A., Nile, B.K., Riksen, M. and Ritsema, C., 2023. **Effect of Artificial (Pond) Recharge on the Salinity and Groundwater Level in Al-Dibdibba Aquifer in Iraq Using Treated Wastewater**. Water, 15(4), p.695.

9. Ahmed, D.N., Hussein, M.A., Abdul-Kareem, M.B., Hassan, W.H., Al-Ansari, N. and Faisal, A.A., 2023. **Green Synthesis of Hybrid Iron Oxides/Graphene Immobilization on the Iron Slag for Reclamation Congo Red Dye-Water.** *Water, Air, & Soil Pollution*, 234(12), p.778.
10. Adham, A., Abed, R., Mahdi, K., Hassan, W.H., Riksen, M. and Ritsema, C., 2023. **Rainwater Catchment System Reliability Analysis for Al Abila Dam in Iraq's Western Desert.** *Water*, 15(5), p.944.
11. Faisal, A.A., Al-Ridah, Z.A., Al-Ansari, N., Hassan, W.H., Al-Hashimi, O., Ghfar, A.A. and Hashim, K., 2023. **Controlling metal ion migration in contaminated groundwater with Iraqi clay barriers for water resource protection.** *RSC advances*, 13(24), pp.16196-16205.
12. Faisal, A.A., Rashid, I.T., Hassan, W.H., Al-Ansari, N., Al-Hashimi, O. and Ghfar, A.A., 2023. **Remediation of Silty Clay Soil Contaminated with Metal Ions by Electric Field Technology with the Support of Acidic Injection Wells.** *Water, Air, & Soil Pollution*, 234(6), p.361.
13. Gubari, M.Q., Zwain, H.M., Hassan, W.H., Vakili, M. and Majdi, A., 2023. **Desalination of pigment industry wastewater by reverse osmosis using OPM-K membrane.** *Case Studies in Chemical and Environmental Engineering*, p.100401.
14. Hassan, W.H. and Shabat, N.A., 2023. **Numerical Investigation of the Optimum Angle for Open Channel Junction.** *Civil Engineering Journal*, 9(05).
15. Hassan, W.H., Hussein, H.H. and Nile, B.K., 2022. **The effect of climate change on groundwater recharge in unconfined aquifers in the western desert of Iraq.** *Groundwater for Sustainable Development*, 16, p.100700.
16. Hassan, W.H. and Nile, B.K., 2021. **Climate change and predicting future temperature in Iraq using CanESM2 and HadCM3 modeling.** *Modeling Earth Systems and Environment*, 7(2), pp.737-748.
17. Hassan, W.H., Nile, B.K., Mahdi, K., Wesseling, J. and Ritsema, C., 2021. **A feasibility assessment of potential artificial recharge for increasing agricultural areas in the kerbala desert in iraq using numerical groundwater modeling.** *Water*, 13(22), p.3167.
18. Hassan, W.H., Hussein, H.H., Khashan, D.H., Alshammari, M.H. and Nile, B.K., 2022. **Application of the Coupled Simulation-optimization Method for the Optimum Cut-off Design Under a Hydraulic Structure.** *Water Resources Management*, pp.1-18.
19. Hassan, W.H. and Jalal, H.K., 2021. **Prediction of the depth of local scouring at a bridge pier using a gene expression programming method.** *SN Applied Sciences*, 3(2), pp.1-9.
20. Hassan, W.H., 2017. **Application of a genetic algorithm for the optimization of a cutoff wall under hydraulic structures.** *Journal of Applied Water Engineering and Research*, 5(1), pp.22-30.
21. Hassan, W.H., Jassem, M.H. and Mohammed, S.S., 2018. **A GA-HP Model for**

- the Optimal Design of Sewer Networks.** *Water Resources Management*, 32(3), pp.865-879.
22. Hassan, W.H., 2018. **Application of a Genetic Algorithm for the Optimization of a Location and Inclination Angle of a Cut-Off Wall for Anisotropic Foundations Under Hydraulic Structures.** *Geotechnical and Geological Engineering*, pp.1-13.
  23. Hassan, W., Faisal, A., Abed, E., Al-Ansari, N. and Saleh, B., 2021. **New composite sorbent for removal of sulfate ions from simulated and real groundwater in the batch and continuous tests.** *Molecules*, 26(14), p.4356.
  24. Hassan, W.H., Nile, B.K. and Al-Masody, B.A., 2017. **Climate change effect on storm drainage networks by storm water management model.** *Environmental Engineering Research*, 22(4), pp.393-400.
  25. Wadi, W.M., Nile, B.K. and Hassan, W.H., 2022, June. **Climate Change Effect on The South Iraq Stormwater Network.** In 2022 International Congress on Human-Computer Interaction, Optimization and Robotic Applications (HORA) (pp. 1-7). IEEE.
  26. Hassan, W.H., Attea, Z.H. and Mohammed, S.S., 2020. **Optimum layout design of sewer networks by hybrid genetic algorithm.** *Journal of Applied Water Engineering and Research*, pp.1-17.
  27. Hassan, W.H., 2020. **Climate change impact on groundwater recharge of Umm er Radhuma unconfined aquifer Western Desert, Iraq.** *International Journal of Hydrology Science and Technology*, 10(4), pp.392-412.
  28. Hassan, W.H. and Hashim, F.S., 2020. **The effect of climate change on the maximum temperature in Southwest Iraq using HadCM3 and CanESM2 modelling.** *SN Applied Sciences*, 2(9), pp.1-11.
  29. Mohammed, Z.M. and Hassan, W.H., 2022. **Climate change and the projection of future temperature and precipitation in southern Iraq using a LARS-WG model.** *Modeling Earth Systems and Environment*, pp.1-14.
  30. Mohammed, M.H., Zwain, H.M. and Hassan, W.H., 2021. **Modeling the impacts of climate change and flooding on sanitary sewage system using SWMM simulation: a case study.** *Results in Engineering*, 12, p.100307.
  31. Hassan, W.H., Hussein, H.H., Alshammari, M.H., Jalal, H.K. and Rasheed, S.E., 2022. **Evaluation of gene expression programming and artificial neural networks in PyTorch for the prediction of local scour depth around a bridge pier.** *Results in Engineering*, 13, p.100353.
  32. Faris, A.M., Nile, B.K., Mussa, Z.H., Alesary, H.F., Al Juboury, M.F., Hassan, W.H., Al-Bahrani, H.A. and Barton, S., 2022. **Fate and emission of methyl mercaptan in a full-scale MBBR process by TOXCHEM simulation.** *Journal of Water and Climate Change*.
  33. Algretawee, H., Al-Saadi, R.J.M., Al Juboury, M.F., Hasan, W.H., Nile, B.K. and Kadhim, M.A., 2022. **Determination of Difference Amount in Reference Evapotranspiration between Urban and Suburban Quarters in Karbala City.** *Journal of Ecological Engineering*, 23(7), pp.180-191.

34. Fattah, M.Y., Hassan, W.H. and Rasheed, S.E., 2018. **Behavior of Flexible Buried Pipes Under Geocell Reinforced Subbase Subjected to Repeated Loading.** *International Journal of Geotechnical Earthquake Engineering (IJGEE)*, 9(1), pp.22-41.
35. Fattah, M.Y., Hassan, W.H. and Rasheed, S.E., 2018. **Effect of Geocell Reinforcement above Buried Pipes on Surface Settlement** *International Review of Civil Engineering (IRECE)*, 9(2), pp.86-90.
36. Hassan, W.H., Attea, Z.H. and Mohammed, S.S., 2020. **Optimum layout design of sewer networks by hybrid genetic algorithm.** *Journal of Applied Water Engineering and Research*, pp.1-17.
37. Hassan, W.H., 2020. **Studying the impact of Climate Change on the Average Temperature using CanESM2 and HadCM3 Modelling in Iraq.** *International Journal of Global Warming*, Vol.24 No.2.
38. Hassan, W.H., 2020. **Climate change projections of maximum temperatures for southwest Iraq using statistical downscaling.** *Climate Research*, 83, pp.187-200.
39. Hassan, W.H., 2021. **Survey the Suitable Approach to Predict the Local Scour Depth around a Bridge Pier.** *Asia-Pacific Journal of Science and Technology*, 26(03).
40. Nile, B.K., Hassan, W.H. and Esmaeel, B.A., 2018, November. **An evaluation of flood mitigation using a storm water management model [SWMM] in a residential area in Kerbala, Iraq.** In *IOP Conference Series: Materials Science and Engineering (Vol. 433, No. 1, p. 012001)*. IOP Publishing.
41. Kais Jalal, H. and Hassan, W.H., 2020. **Three-dimensional numerical simulation of local scour around circular bridge pier using Flow-3D software.** *MS&E*, 745(1), p.012150.
42. Kais Jalal, H. and Hassan, W.H., 2020. **Effect of Bridge Pier Shape on Depth of Scour.** In *IOP Conference Series: Materials Science and Engineering (Vol. 671, No. 1, p. 012094)*. IOP Publishing.
43. Mohsen, K.A., Nile, B.K. and Hassan, W.H., 2020, January. **Experimental work on improving the efficiency of storm networks using a new galley design filter bucket.** In *IOP Conference Series: Materials Science and Engineering (Vol. 671, No. 1, p. 012094)*. IOP Publishing.
44. Mohammed, S.R., Nile, B.K. and Hassan, W.H., 2020, January. **Modelling Stilling Basins for Sewage Networks.** In *IOP Conference Series: Materials Science and Engineering (Vol. 671, No. 1, p. 012111)*. IOP Publishing.
45. Khalaf, R.M. and Hassan, W.H., 2013. **Evaluation of irrigation water quality index IWQI for Al-Dammam confined aquifer in the west and southwest of Karbala city, Iraq.** *International Journal of Civil Engineering IJCE*, 23, pp.21-34.
46. AL-Musawi, E.W.H., 2006. **Optimum design of control devices for safe seepage under hydraulic structures.** *Journal of Engineering and Development*, 10(1).
47. Al-Mussawi, W.H., 2014. **Assessment of Groundwater Quality in UMM ER Radhuma Aquifer (Iraqi Western Desert) by Integration Between Irrigation**

- Water Quality Index and GIS.** *Journal of Babylon University Engineering Sciences*, 1(22), pp.201-217.
48. Al-Mussawi, W.H., 2008. **Kriging of Groundwater Level – A Case Study of Dibdiba Aquifer in Area of Karbala-Najaf.** *Journal of Kerbala University*, 6(1).
  49. Majeed, S.A.A.D., Mohammed, O.I. and Hassan, W.H., 2016. **Determining Irrigation Water Quality Index for Evaluation Groundwater Quality of Green-Belt Zone, Karbala, Iraq.** 4th International Congress on Civil Engineering, Architecture & Urban Development, SHAHID BEHESHTI University.
  50. Hassan, W.H. and Attiyah, Z.H., 2019. **Layout Optimization of Sewer Networks by Adaptive Genetic Algorithm in A Hybrid Model.**
  51. Al-Mussawy, W.H. and Al-Din, A.L.S.A., 2014. **Simulating the Impacts of Groundwater Pumping on Dibdibba Aquifer in Karbala Province.** 1st International Conference on Engineering Sciences Applications, ICESA.
  52. Khalaf, A.P.D.R.M. and Hassan, A.P.D.W.H., 2016. **Estimation the hydrogeological characteristics of Al-Dammam confined aquifer in the west and southwest of Karbala city, Iraq.** *Journal of Kerbala University* 14(2),pp. 24-35.
  53. WH Al-Mussawi, LDMH Al-Shammary ,2009. **Three-dimensional numerical investigation of flow at 90° open channel junction.** *Journal of Kerbala University*, Vol. 7 No.4 Scientific.
  54. Al-Mussawi, W.H., 2010. **Numerical Analysis of Velocity Profile and Separation Zone in Open Channel Junctions.** *Babylon Journal for Engineering Sciences* Vol. 2 No. \_ Year 2010.

## **Job Experience**

### **1. Civil Engineering Department, University of Kerbala.2014- until now**

- Working as a member of teaching faculty. Responsibilities include teaching an under graduated courses in Engineering such as Hydrology, Hydraulic Structures, Soil Mechanics, Fluid Mechanics, and Mathematic.
- Teaching a post graduated course in hydraulic and geotechnical fields, such as flow through porous media, Finite Element Method, analysis of Numerical method, and water Resources system analysis.
- Working as a supervisor of postgraduate studies (M.Sc & PhD) in Water resources, Geotechnical and Infrastructure Engineering fields (More than 50 students).

### **2. Engineering Consultant Bureau/Karbala University. 2008 until now.**

- Member in the Consultant Engineering team for preparing the soil

investigation and hydrogeologic reports for new Karbala airport, in Karbala Province.

- Member in the Consultant Engineering teams for preparing many soil investigations reports as (Bridges, malty story buildings, schools and Network and Pumping Stations) in Karbala, Najaf and Babil Provinces.
- Member in the Consultant Engineering teams for designing many Storm Water Sewerage (Network and Pumping Stations) in Karbala, Najaf and Babil Provinces.
- Designer for the main water pipe in Al-Eskandarya sub-district.
- Member of the consultant engineering bureau college of engineering - Karbala University.
- Designer for many building with **consultant engineering bureau college of engineering - Karbala University** which include:
  - Preparing sanitary designs for College of Arts - University of Karbala.
  - Preparing sanitary designs for Directorate of Internal Affairs and Security - the Police Directorate of holy Karbala.
  - Preparing sanitary designs for the building Directorate distribution of petroleum products - a branch holy Karbala.
  - Preparing sanitary designs for Police Academy - Police Directorate of holy Karbala.
  - Preparing sanitary designs for laboratory Karbala structural.
  - Authentication sanitary designs for Jannat Hussein residential project (work is continuing).
  - Preparing and designs for (Al-Hurr distract, Al-Hindia distract, al-hussainya , al-gadeer , shorta, Q.) sewerage & rain pump station - Directorate sewerage of Karbala .
  - Authentication and modify Sewerage designs for al hur & al hendeya (WWTP) - Directorate sewerage of Karbala.
  - Authentication and modify Sewerage designs for Frahaa (WWTP) - Directorate sewerage of Karbala.

#### **Computer Software Background:**

Familiar with the use of MS Windows, GIS, AutoCAD (2D&3D), Water CAD, GMS, FLUENT, FLOW3D, ANN, Good user.