CURRICULUM VITAE
Mohamed G. Arab, Ph.D., M.ASCE

Associate Professor, Civil & Environmental Eng. Dept., Engineering College, University of Sharjah, Sharjah, UAE.
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Education

May 2008 – August 2011	**Ph.D.**, Civil and Environmental Engineering, **Arizona State University, Tempe, USA.** **GPA: 4.00** **Thesis:** The Integrity of Geosynthetic Elements of Waste Containment Barrier Systems Subject to Seismic Loading. **Supervisor:** Edward Kavazanjian, Jr., Ph.D.
August 2006 – May 2008	**M.Sc.**, Civil and Environmental Engineering, **Arizona State University, Tempe, USA.** **GPA: 4.00** **Thesis:** Field Instrumentation Program Required to Monitor Moisture-Temperature Coupled Flux in Arid Regions. **Supervisor:** Claudia Zapata, Ph.D.
Sep. 1999 – June 2004	**B.Sc.**, Civil Engineering**, Faculty of Engineering, Mansoura University, Mansoura, Egypt** **Honors, Ranked First**

Academic Appointment

Jan. 2021 – Now	**Associate Professor:** Department of Civil & Environmental Eng., College of Engineering, University of Sharjah, Sharjah, UAE
Feb. 2017 – Jan. 2021	**Assistant Professor:** Department of Civil & Environmental Eng., College of Engineering, University of Sharjah, Sharjah, UAE Developed and taught the following courses: **Undergraduate Level:** • Foundation Engineering 1 • Foundation Engineering 2 • Geotechnical Engineering • Geotechnical Engineering Laboratory • Statics • Professional Practice for Civil and Environmental Engineering

Graduate Level:

- Ground Improvement
- Soil Dynamics
- Advanced Geotechnical Engineering
- Theoretical & Computational Soil Mechanics

Nov. 2018 - now *(on leave)*

Associate Professor: Structural Eng. Dept., Faculty of Engineering, Mansoura University, Mansoura, Egypt.

May 2012 - Feb. 2017

Assistant Professor: Structural Eng. Dept., Faculty of Engineering, Mansoura University, Mansoura, Egypt

Developed and taught the following courses:

Undergraduate Level:

- Engineering Ethics to Freshman students
- Foundation Engineering 1 to Sophomore students
- Foundation Engineering 2 to Senior students
- Geotechnical Engineering
- Soil Hydraulics

Graduate Level:

- Advanced Soil Mechanics
- Advanced Foundation Design
- Retaining Structures Design

March 2014 - Sep. 2016

Director of Soil Mechanics and Foundation Laboratory, Mansoura University, Egypt

Prepared Geotechnical investigation reports for projects starting from houses to Hospitals. The Laboratory activities covered a wide spectrum starting from basic geotechnical and geological surveys to complicated soil Testing including Dynamic triaxial and centrifuge testing. Also, I led the laboratory to get accreditation **ISO 17025** from the Egyptian accreditation body (EJAC).

August 2011 - May 2012

Post-Doctoral Research Associate Arizona State University, Tempe, AZ, USA

Working on an NSF research project titled "GOALI: Collaborative Research**:** The Integrity of Geosynthetic Elements of Waste Containment Barrier Systems Subject to Large Settlement and Seismic Loading" under Prof. Kavazanjian.

Sep. 2008 - August 2011

Graduate Research Assistant, Arizona State University, Tempe, AZ, USA

Working on an NSF research project titled "GOALI: Collaborative Research**:** The Integrity of Geosynthetic Elements of Waste Containment Barrier Systems Subject to Large Settlement and Seismic Loading" under Prof. Kavazanjian. The objective of this project is to develop

guidelines for identifying when a waste settlement or seismic loading presents a threat to the integrity of geosynthetic elements of waste containment along with a practical methodology for evaluating the performance of these geosynthetic elements and affecting design changes when a threat is identified. This is done with numerical modeling.

August 2006 - May2008 **Graduate Research Assistant, Arizona State University, Tempe, AZ, USA**

Working on a research project titled "Coupled Soil-Atmosphere Modeling for Unsaturated Soil Moisture Movement" under Dr. Zapata to model the moisture movement under non-isothermal conditions in the field and try to validate the available mathematical models that describe the moisture movement under different types of boundary conditions. Landfill and mining covers is an example of problems covered in this project.

Sept 2004 - May 2006 **Teaching Assistant**, **Mansoura University, Egypt**

Taught undergraduate geotechnical engineering laboratory, Foundations, and undergraduate soil mechanics classes.

Professional Affiliations

- **Associate member,** The United States Universities Council on Geotechnical Education and Research **(USUCGER).**
- **Founding member**, Egyptian Geo-synthetic Society **(IGSE)**
- **Founding member**, the Saudi Society for Geotechnical Engineering (SSGE)
- **Member,** International Geo-synthetic Society **(IGS)**
- **Member,** International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE).
- **Member,** American Society of Civil Engineers.
- **Member,** Geo-institute: ASCE.
- Syndicate of Engineering, Cairo, Egypt
- **Member,** Egyptian Society of Geotechnical Engineers.
- **Member,** Chi-Epsilon Honor Society.
- **Founder,** Egyptian Student Association of North America-ESANA, Arizona State University Chapter (2007-2011).

Principal Areas of Teaching and Research

Teaching Geo-environmental Engineering, Soil Mechanics, Foundation Engineering, Geotechnical Earthquake Engineering, Experimental Soil Mechanics, Geosynthetics Design, Soil Improvement, Soil Dynamics

Research Bio-geotechnical methods for soil improvement, static and dynamic properties of municipal solid waste, seismic design of waste containment facilities, Modeling pile behavior under lateral loading, earthquake

engineering for transportation facilities, geologic hazard evaluation, and mitigation, Municipal Solid waste characterization and modeling.

Publications

- Total Journal Publications 30
- Total Conference Publications 26
- Book Chapters 4

Journal Publications

1. Ayeldeen, M., Waseim, A., and **Arab, M. G.** (**2021**) "The Use of Fiber to Improve the Characteristics of Collapsible Soil Stabilized with Cement" **under review**, *Geotechnical and Geological Engineering*, GEGE-D-20-00265R1**.**
2. Lemboye, K., Almajed, A., Alnuaim, A., and **Arab, M. G.** (**2021**) "Permeability Investigation on Treated Sand using Enzyme Induced Carbonate Precipitation and Biopolymer" **accepted**, *Innovative Infrastructure Solutions Journal*.
3. Alotaibi, E., Omar, M., Shanableh, A., Zeiada, W., Fattah, M. Y., Tahmaz, A., and **Arab, M. G.** (**2021**). "Geogrid bridging over existing shallow flexible PVC buried pipe–Experimental study." *Tunnelling and Underground Space Technology*, 113, 103945.
4. Alotaibi, E., Mostafa, O., Nassif, N., Omar, M., and **Arab, M. G.** (**2021**). "Prediction of Punching Shear Capacity for Fiber-Reinforced Concrete Slabs Using Neuro-Nomographs Constructed by Machine Learning." *Journal of Structural Engineering*, 147(6), 04021075.
5. **Arab, M. G.,** Omar, M., Almajed, A., Elbaz, Y., and Ahmed, A. H. (**2021**). "Hybrid technique to produce bio-bricks using enzyme-induced carbonate precipitation (EICP) and sodium alginate biopolymer" *Construction and Building Materials*, 284, 122846.
6. **Arab, M. G.,** Rohy, H., Zeiada, W., Almajed, A., and Omar, M. (**2021**) "One-Phase EICP Biotreatment of Sand Exposed to Various Environmental Conditions" *Journal of Materials in Civil Engineering*, 33(3), 04020489.
7. Lemboye, K., Almajed, A., Alnuaim, A., **Arab, M.,** and Alshibli, K. (**2021**) "Improving sand wind erosion resistance using renewable agriculturally derived biopolymers" *Aeolian Research*, 49, 100663.
8. Almajed, A., Abbas, H., **Arab, M.**, Alsabhan, A., Hamid, W., and Al-Salloum, Y. (**2020**) "Enzyme-Induced Carbonate Precipitation (EICP)-Based methods for ecofriendly stabilization of different types of natural sands" *Journal of Cleaner Production*, 274, 122627.
9. **Arab, M. G.,** Alzara, M., Zeiada, W., Omar, M., & Azam, A. (**2020**) "Combined effect of compaction level and matric suction conditions on flexible pavement performance using construction and demolition waste" *Construction and Building Materials*, 261, 119792.
10. **Arab, M. G.,** Abdelmoghni, M., Akl, S. A., and Dif, A. (**2020**) "Numerical Modeling of Unfavorable CFA Pile Drilling Conditions" *Geotechnical and Geological Engineering*, 38(6), 6869-6889.
11. Zeiada, W., Souliman, M., I., **M.G. Arab**, B. Shane Underwood, and Kamil E. Kaloush **(2020)** "Fatigue Behavior of Conventional and Rubber-Modified Gap Graded Asphalt Mixtures Using Bending and Axial Fatigue Tests" *Australian journal of civil engineering*, 1-13, https://doi.org/10.1080/14488353.2020.1854943.
12. **Arab**, **M. G.,** Rohy, H., Zeiada, W., Almajed, A., and Omar M. **(2020)** "One-Phase EICP Bio-Treatment of Sand Exposed to Various Environmental Conditions" *Journal of Materials in Civil Engineering (ASCE)*, DOI: 10.1061/(ASCE)MT.1943-5533.0003596.
13. Abdallah, M., **Arab, M. G.**, Shabib, A., El-Sherbiny, R., & El-Sheltawy, S. (**2020**). Characterization and sustainable management strategies of municipal solid waste in Egypt. *Clean Technologies and Environmental Policy*, 1-13.
14. Almajed, A., Lemboye K., **Arab**, **M. G.,** and Alnuaim, A. (**2020**) "Mitigating wind erosion of sand using biopolymer-assisted EICP technique." *Soils and Foundations*; Volume 60, Issue 2, Pages 356-371.

15. Ashour, M., Alaaeldin, A. and **Arab, M. G. (2020).** Laterally Loaded Battered Piles in Sandy Soils. *Journal of Geotechnical and Geoenvironmental Engineering (ASCE)*, 146(1), 06019017.
16. Omar, M., Shanableh, A., Hamad, K., Tahmaz, A., **Arab, M. G.**, & Al-Sadoon, Z. **(2019)** "Nomographs for predicting allowable bearing capacity and elastic settlement of shallow foundation on granular soil." *Arabian Journal of Geosciences*, 12(15), 485.
17. Souliman, M., Kaloush, K., Zeiada, W., **Arab, M. G.** (**2019**) "Effect of Asphalt Binders with Identical PG Grading from Different Suppliers on the Laboratory Performance of Asphalt Mixture" *International Journal of Pavement Research and Technology*, 12, no. 2: 117-124.
18. Abdallah, M., Shanableh, A., **Arab, M.**, Shabib, A., Adghim, M., & El-Sherbiny, R. (**2019**) "Waste to energy potential in middle-income countries of MENA region based on multi-scenario analysis for Kafr El-Sheikh Governorate, Egypt" *Journal of Environmental Management*, 232, 58-65.
19. Omar, M., Shanableh, A., **Arab, M.**, Hamad, K., & Tahmaz, A. (**2018**) "Advanced Mathematical Models to Predict the Compaction Properties of Coarse-Grained Soils from Various Physical Properties" *Geotechnical and Geological Engineering*, 36(6), 3467-3483.
20. **Arab, M. G.,** Mousa, R. A., Gabr, A. R., Azam, A. M., El-Badawy, S. M., & Hassan, A. F. (**2018**) "Resilient Behavior of Sodium Alginate–Treated Cohesive Soils for Pavement Applications" *Journal of Materials in Civil Engineering*, ASCE, 31(1), 04018361.
21. Omar, M., Shanableh, A., Mughieda, O., **Arab, M. G.,** Zeiada, W., & Al-Ruzouq, R. (**2018**) "Advanced mathematical models and their comparison to predict compaction properties of fine-grained soils from various physical properties" *Soils and Foundations*, 58, no. 6 (2018): 1383-1399.
22. **Arab, M. G.**, AlaaEldin, A., & Ashour, M. (**2018**). "Effect of Sand-Pile Interaction on the Response of Battered Piles Subjected to Lateral Loads" *Jordan Journal of Civil Engineering*, 12(4), 721-729.
23. Moustafa, H. A. El-Ashwah, A. S., **Arab**, **M. G.,** Adel Dif, and Rafik Belarbi (**2018**) "Coupled Non-Isothermal Moisture Modeling in Asphalt Pavement Design" Engineering Research Journal, Helwan University, Egypt, 2018;158 (159).
24. Osman, Y., Zaki, R. and **Arab, M. G.** (**2018**) "Effect of bacteria on Improvement of Physical Properties of Sand" Life Science Archives (LSA) Volume – 4; Issue - 2; Year – 2018; Page: 1309 – 1316, DOI: 10.22192/lsa.2018.4.2.2.
25. Kavazanjian, E., Wu, X., **Arab, M. G.,** & Matasovic, N. **(2018)** "Development of a numerical model for performance-based design of geosynthetic liner systems" *Geotextiles and Geomembranes*, 46(2), 166-182. (This paper received the 2018 Best Paper Award "Honorable Mention" by the geotextiles and geomembranes editorial board)
26. Ashour, M, Alaa Eldin, A., **Arab M. G. (2018)** "Battered Piles under Lateral Loads using Strain Wedge Model and Current Practice" *New York Science Journal,*11(7).
27. Elkinawy, M., Gabr, A., **Arab, M. G.**, Rafik Belarbi, **(2018)** "Swelling Behavior of Compacted Clay Soil from Elshrouq City, Egypt" *New York Science Journal,* 11(8).
28. Zahraa A., **Arab**, M. G., and Dif. A. (**2016**) "Analysis of The arching phenomenon of bored piles in sand." *Alexandria Engineering Journal*, 55(3): 2639-2645.
29. El-Meliegy M., Dif A., Shawky, O., **Arab M. (2013)** "Effect of soil type and footing rigidity on the behavior of nuclear power plants foundation" *Mansoura Engineering Journal*, Faculty of Engineering, Mansoura Egypt.
30. Carlson, J., Kaloush, K., Golden, J., **Arab**, **M.G.** and Zapata, C. (**2008**) "Evaluation of In Situ Temperature, Water Infiltration and Regional Feasibility of Pervious Concrete" *International Journal of Pavements (IJP)*, Volume 7.

Peer-Reviewed Conference Papers

1. Sebai, H., Barakat, S., and **Arab, M. G. (2021)** "A Reliability-Based Design Optimization of Cantilever Reinforced Concrete Retaining Walls" *2021 Geo-Congress: IFCEE*, May 10-14, Dallas, TX USA
2. Alsodi, R., **Arab M. G.**, Shanablah, A., Omar, M., Zeida, W., Samarai, M. (**2020**) "Optimization of Enzyme Induced Carbonate Precipitation (EICP) cementing solution using Design of Experiments" *5th World Congress on Civil, Structural, and Environmental Engineering (CSEE'20),* October 18 - 20, 2020 | Lisbon, Portugal.
3. Jarah, B., **Arab, M. G.**, Junaid, T., Omar, M. (**2020**) "Effect of Alkali Activator Type on the Local UAE Sand Treated with Alkali Activated Binders" *5th World Congress on Civil, Structural, and Environmental Engineering (CSEE'20),* October, 18 - 20, 2020 | Lisbon, Portugal.
4. **Arab, M. G.**, Omar, M., Alotaibi, E., Mostafa, O., Naeem, M., Badr, O., **(2020)** "Bio-inspired 3D-Printed Honeycomb for Soil Reinforcement" *2020 Geo-Congress: Vision, Insight, Outlook*, February 25–28, Minneapolis, Minnesota.
5. Refaei, M., **Arab, M. G.**, Omar, M. **(2020)** "Sandy Soil Improvement via Biopolymer Assisted EICP" *2020 Geo-Congress: Vision, Insight, Outlook,* February 25–28, Minneapolis, Minnesota.
6. **Arab M.**, Omar M., Aljassmi R., Nasef R., Nassar L., Miro S. **(2020) "**EICP Cemented Sand Modified with Biopolymer." *Geomeast 2019, In International Congress and Exhibition*, Cairo, Egypt, 10-14 Nov. 2019, "Sustainable Civil Infrastructures" (pp. 74-85). Springer, Cham.
7. **Arab, M. G.**, **(2019)** "Soil Stabilization using Calcium Carbonate Precipitation via Urea Hydrolysis" *4th International Conformance on Geotechnical Research and Engineering (ICGRE'19),* April 7 - 9, 2019, Rome, Italy
8. Rohy H., **Arab, M. G.**, Zeiada, W., Omar, M., Almajed, A., Tahmaz, A. **(2019)** "One Phase Soil Bio-Cementation with EICP-Soil Mixing" *4th International Conformance on Geotechnical Research and Engineering (ICGRE'19),* April 7 - 9, 2019, Rome, Italy (This paper received the Best Paper Award from the conference organizers)
9. **Arab, M. G.**, Junaid, M. T., Omar, M., Zeiada, W., Shanableh, A., Rammal, R. **(2019)** "Using Alkali-Activated Binders to Improve UAE Dune Sand" *4th International Conformance on Geotechnical Research and Engineering (ICGRE'19)*, April 7 - 9, 2019, Rome, Italy
10. Obaid, L., Alan, S., Omar, M., Barakat, S., **Arab, M. G.**, Leblouba, M., Shanableh, A., Tahmaz A. **(2019)** "The Development of a Local Ground Motion Prediction Equation from Recorded Data" *4th International Conformance on Geotechnical Research and Engineering (ICGRE'19)*, April 7 - 9, 2019, Rome, Italy.
11. Abdelmoghni, M., **Arab**, **M. G.,** Dif, A. and Akl, S. A. **(2019) "**Numerical Modeling of Unfavorable CFA Pile Drilling" International Conference on Advances in Structural and Geotechnical Engineering (ICASGE'19), *Tanta University, 25-28 March 2019, Hurghada, Egypt*.
12. Alotaibi, E., Omar, M., **Arab**, **M. G.**, Tahmaz, A., Zeiada, W., and Shanableh, A. **(2019)** "Experimental Investigation of the Effect of Geogrid Reinforced Backfill Compaction on Buried Pipelines Response" *4th International Conformance on Geotechnical Research and Engineering (ICGRE'19)*, April 7 - 9, 2019, Rome, Italy.
13. **Arab M. G.**, Elgamal A., Omar M., Zeiada W. **(2018)** "Settlement Induced during CFA Pile Installation in Egyptian Nile Valley Region: Case Study" *International Foundations Congress and Equipment Exposition conference (IFCEE 2018)*, 5-10 March 2018, Orlando, Florida, USA (accepted, will be published in ASCE special publication).
14. Omar, M., Shanableh, A., Abduljalil, S., Hamad, K., **Arab M. G.**, Leblouba, M., and Tahmaz A. **(2017)** "Geotechnical Mapping of Seismic Risk for Sharjah City, United Arab Emirates" *Global Civil Engineering Conference (GCEC2017)*, 25-28 Jul **2017**, Kuala Lumpur, Malaysia
15. Mousa, R., Gabr, A., and **Arab M. G.**, Azam, A., El-Badawy, S. **(2017)** "Resilient Modulus for Unbound Granular Materials and Subgrade Soils in Egypt" *Advances in Sustainable Construction Materials & Civil Engineering Systems (ASCMCES-17)*, University of Sharjah, Sharjah, 18-20 April, **2017**.
16. **Arab, M.G.**, Omar, M., Tahmaz, A. **(2017)** "Numerical Analysis of Shallow Foundations on

Geogrid Reinforced Soil", *Advances in Sustainable Construction Materials & Civil Engineering Systems (ASCMCES-17)*, University of Sharjah, Sharjah, 18-20 April.

17. Omar, M., Shanableh, A., Abduljalil, S., Hamad, K., **Arab**, **M. G.,** Leblouba, M., and Tahmaz A. **(2017)** "Geotechnical Mapping of Seismic Risk for Sharjah City, United Arab Emirates" *Global Civil Engineering Conference (GCEC2017)*, 25-28 Jul **2017**, Kuala Lumpur, Malaysia.
18. Kamal, Z. A., **Arab**, **M. G.,** Dif, A. (**2016**) "Numerical Study of Arching Phenomenon of Bored Piles in Sand" *4th Geo-China International Conference*, July 25-27, 2016, Shandong, China.
19. Mousa, R., El-Badawy, S., Azam, A., Gabr, A., and **Arab, M. G. (2015)** "Resilient Modulus Characterization for Granular Base Material in Egypt" *8th International Mansoura Faculty of Engineering Conference,* 17-22 Nov. 2015, Sharm El-Sheik, Egypt.
20. Kavazanjian, E., Jr, **Arab, M. G.**, Matasovic, N. **(2014)** "Performance Based Design for Seismic Design of Geosynthetics-Lined Waste Containment Systems" *Earthquake Geotechnical Engineering Design*, 363-385.
21. Kavazanjian, E., Jr., **Arab, M. G.**, and Matasovic, N. **(2011)** "Seismic Analysis of Heap Leach Pad Liner Systems" *5th international conference on earthquake geotechnical engineering, Santiago, Chile*, January 10-13, 2011.
22. **Arab, M. G.**, Kavazanjian, E. Jr. and Matasovic, E. **(2011)** "Seismic Analysis of a Geosynthetic Liner System" Geo-Frontiers 2011, Dallas, Texas, March 10-13, 2011.
23. **Arab, M. G.**, Kavazanjian, E. Jr. and Fox P. **(2011)** "Displacement-Softening Constitutive Model for Geosynthetic Interfaces" *5th Pan-American Conference on Teaching and Learning of Geotechnical Engineering*, October 2-6, 2011, Toronto, Ontario, Canada.
24. **Arab, M. G.**, and Kavazanjian, E., Jr. **(2010)** "Time-Domain Analysis of Frictional Base Isolation Using Geosynthetics" *9th International Conference on Geosynthetics*, Brazil, May 23-27 2010.
25. **Arab, M. G.**, Kavazanjian, E., Jr. and Matasovic N. **(2010)** "Nonlinear Time-Domain Analysis of a Sliding Block on a Plane" *5th international conference on Recent advances in geotechnical earthquake engineering and soil dynamics*, San Diego, California, May 24-29, 2010.
26. **Arab, M. G.**, Zapata, C.E., and Marinho, F. A. M. **(2009)** "Using MEMS Based RH Sensor to Measure High Total Suction" *17th International Conference on Soil Mechanics & Geotechnical Engineering*, Alexandria, Egypt, 5-9 October 2009. v. 3. p. 1881-1884.

Book Chapters

1- Kavazanjian, E., Jr., **Arab, M.G.**, Fox, P.J. and Matasovic, N. **(2014)** "Performance Based Seismic Design of Geosynthetic Barriers for Waste Containment," in *Earthquake Geotechnical Engineering Design,* M. Maugeri and C. Soccodato (eds.), ISBN 978-3-319-03182-8, Springer-Verlag Berlin Heidelberg, pp. 363-385.

2- **Arab, M.G.**, Kavazanjian, E., Jr., Fox, P.J., Sura, J.M., and Nye, C. **(2013)** "Strain Softening Constitutive Model for the Internal Shear Behavior of a Geosynthetic Clay Liner Subject to Cyclic Loading," in Sound Geotechnical Research to Practice, Honoring Robert D. Holtz II, A. Strudlein and R. Berg, eds., ASCE Geotechnical Special Publication 230, pp. 291-306, doi: 10.1061/9780784412770.019

3- Omar, M., Shanableh, A., Abduljalil, S., Hamad, K., **Arab, M. G.,** Leblouba, M., and Tahmaz, Ali "Geotechnical Mapping of Seismic Risk for Sharjah City, United Arab Emirates" In Global Civil Engineering Conference, pp. 1185-1210. Springer, Singapore, **2017**.

4- **Arab, M. G.**, Omar, M., Aljassmi, R., Nasef, R., Nassar, L., Miro, S. **(2020) "**EICP Cemented Sand Modified with Biopolymer" Sustainable Civil Infrastructures (pp. 74-85). Springer, Cham.

Research Reports:

1- **Arab, M.** and El-Badawy, S. "Municipal Solid Waste Quantities and Composition in Kafr El-Sheikh Governorate" Published by: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)GmbH, German Development Cooperation, National Solid Waste Management Programme, Cairo, Egypt **2013**

Funded Research Projects:

1- **Principal Investigator (PI)**, 2019/2023 Funding source: University of Sharjah, Project Title: " Using Microbial Inspired Techniques to Improve the Geotechnical Properties of Sand Dunes in UAE.".
Budget: 152,600 AED
2- **Principal Investigator (PI)**, 2018/2020 Awarded from Sharjah Research Academy, Project Title " Using Enzyme Induced Calcite Precipitation (EICP) to control dust in UAE ".
Budget: 120,000 AED
3- **Principal Investigator (PI)**, 2018/2020 Awarded from University of Sharjah, Project Title " Using Alkali-Activated Binders to Improve UAE Sabkha Approval Soils. ".
Budget: 79,000 AED
4- **Principal Investigator (PI)**, 2018/2020 Awarded from University of Sharjah, Project Title " Using Sodium Alginate Biopolymer as Soil Reinforcement Technique ".
Budget: 40,000 AED
5- **Co-Principle Investigator (Co-PI),** 2019/2022 Awarded from University of Sharjah, Project Title " Advanced Characterization of Dynamic Soils Properties in UAE for Enhanced Civil Infrastructures Design, University of Sharjah "
Budget: 196,000 AED
6- **Co-Principle Investigator (Co-PI)**, 2017/2019 Awarded from University of Sharjah, Project Title "Influence of Particle Morphology on Strength Properties of UAE Carbonate Sands ".
Budget: 200,000 AED
7- **Co-Principle Investigator (Co-PI)**, 2017/2019 Awarded from University of Sharjah, Project Title "Management of Load Transfer to Underground Structures by Using Geocell Soil Reinforcement".
Budget: 80,000 AED AED
8- **Principle Investigator (PI),** 2012/2013 Awarded from Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Project Title "Analysis of Waste Quantities and composition in Kafr-El-Sheikh Governorate"
Budget: 90,000 EGP
9- **Principal Investigator (PI),** 2013/2015 Awarded from Higher education institutions' labs accreditation project (HLAP), Project Title "The Enhancement of the capabilities of Mansoura Geotechnical Laboratory to meet the requirements of the ISO-17025 ".
Budget: 1,500,000 EGP
10- **Co-Principle Investigator (Co-PI)**, 2015/2017 Awarded from Higher education institutions' labs' accreditation project (HLAP) , Project Title "The Enhancement of the capabilities of Mansoura Pavement Laboratory to meet the requirements of the ISO-17025 ".
Budget: 1,400,000 EGP
11- **Co-Principle Investigator (Co-PI),** 2011/2013 Awarded from: The European commission, "PEOPLE MARIE CURIE ACTION- FP7-PEOPLE 2010-IRSES.The title is Exchange of Experience on The Preservation of Historic and Old Water Masonry Structures."
Budget: 100,000 EUR.

Research Projects not Granted:

1- Research Proposal Title: "**Bio-inspired Cementation Technology for Dust Control and Construction Applications**", Funding Agency: Ministry of Education, requested budget: 7 Million AED.
2- Research Proposal Title "**Innovative Green Construction Materials using Bio-cementation of Wastewater Treatment By-products**" Funding Agency: Sandooq Al Watan Applied Research & Development Proposal, requested budget: 2 Million AED.
3- "Engineering Evaluation of Offshore Wind Structures in Egypt" September 27, 2016, US-Egypt

Joint Board on Scientific and Technological Cooperation Proposal No. 17-140.

4- An STDF Proposal: Enhancing Mansoura University Centrifuge Center Capabilities to be A Center of Excellence
5- An STDF Proposal: Extending the Capabilities of the Highway and Airport Engineering Laboratory at Faculty of Engineering, Mansoura University.
6- An Innovative, Sustainable, and Integrated Management Approach for Energy Recovery from Rice Straw in the Nile Delta Region using Alkaline Industrial.
7- Liquid Waste, Anaerobic Digestion and Geographic Information System (GIS): Research, Development and Innovation Programme (RDI-2), Europe Aid/132- 715/M/ACT/EG
8- Enhancing Mansoura University Centrifuge Center Capabilities to be A Center of Excellence in Solid Waste Management. STDF Grants for Centers of Scientific Excellence (STDF-CSE)

Books

- Egyptian Building Code: Geoenvironmental Engineering Chapter.

Awards

- **Scientific Committee member** for annual conference (5th World Congress on Civil, Structural, and Environmental Engineering) to be held in Lisbon, Portugal in April 2020.
- Received Annual Incentive Award for **Distinguished** Faculty Members in **Teaching, University of Sharjah** 2018/2019.
- **Best Paper Award** for the paper entitled "Development of a numerical model for performance-based design of geosynthetic liner systems" published in Geotextiles and geomembranes 46(2):166-1827 by E. Kavazanjian, X. Wu, **M. Arab**, N. Matasovic.
- **Best Paper Award** for the paper entitled: "One Phase Soil Bio-Cementation with EICP-Soil Mixing" in the **4th** World Congress on Civil, Structural, and Environmental Engineering (CSEE'19) held in Rome, Italy (April 2019).
- **Mentored 1st place** winner team in **7th Undergraduate Research Competition** held in Abu Dhabi University (April 2019) with a project entitled "Bio-inspired 3D printed Root-Like anchor systems with application of Enzyme Induced Carbonate Precipitation (EICP) Grouting"
- **ADSC 2016 Foundation Engineering Faculty workshop Chattanooga USA June 5-10, 2016**.
- **1st place** winning team for the **Sharjah Sustainability Award:** Applied Scientific Research category (2018) Research entitled: Biopolymer Green Building Blocks
- **1st place** winning team for the **Sharjah Sustainability Award:** Applied Scientific Research category (2019) Research entitled: Bio-inspired Honeycomb for Soil Reinforcement.
- Committee member for the **Egyptian Building code**.
- Member, Phi Kappa Phi, National Academic of Engineering Honor Society
- Graduate Research Assistantship, Arizona State University, AZ, 2006 – 2011.
- **Geo-challenge** annual competition travel award, Geo-institute (March 2011).
- **Geo-challenge** annual competition travel award, Geo-institute (March 2010).
- The Egyptian Engineers Syndicate Award for **Scientific Excellence** (January 2006).
- Dakahlia Governorate Award for **Scientific Excellence** (October 2004).
- El-Said Ashour Award for **Scientific Excellence** (October 2004).

Invited Speaker

- Title "Resilient Behavior of Sodium Alginate–Treated Cohesive Soils for Pavement Applications" 26th World Road Congress 2019, 7th, Oct. 2019, ICC Hall, Conference Halls, Abu Dhabi, UAE.
- Title: "Bio-Inspired geo-techniques", May 2019, King Saud University, KSA.
- Title: "The effect of CFA pile installation on Adjacent Structures" Underground Infrastructure and Deep Foundations, Egypt, 2-4 Feb. 2016, Cairo.
- Title: "Mansoura Geotechnical Centrifuge Facility: Centrifuge Modeling Rules", Cairo University Geotechnical Laboratory, May 2016, Cairo.
- Title: "Resilient Behavior of Sodium Alginate–Treated Cohesive Soils for Pavement Applications" 26th World Road Congress 2019, 7th, Oct. 2019, ICC Hall, Conference Halls, Abu Dhabi, UAE.

Continuing Education:

Conferences:

1. 26th World Road Congress 2019, 7th, Oct. 2019, ICC Hall, Conference Halls, Abu Dhabi, UAE
2. 2020 Geo-Congress: Vision, Insight, Outlook, February 25–28, Minneapolis, Minnesota.
3. 4th International Conformance on Geotechnical Research and Engineering (ICGRE'19) April 7 - 9, 2019, Rome, Italy
4. International Conference on Advances in Structural and Geotechnical Engineering (ICASGE'19), Tanta University, 25-28 March 2019, Hurghada, Egypt
5. International Foundations Congress and Equipment Exposition conference (IFCEE 2018), 5-10 March 2018, Orlando, Florida, USA (accepted, will be published in ASCE special publication).
6. Advances in Sustainable Construction Materials & Civil Engineering Systems (ASCMCES-17), University of Sharjah, Sharjah, 18-20 April 2017.
7. International Conference on Advances in Structural and Geotechnical Engineering (ICASGE'16), Tanta University, 27-30 March 2016, Hurghada, Egypt
8. 8th International Mansoura Faculty of Engineering Conference, 17-22 Nov. 2015, Sharm El-Sheik, Egypt.
9. Geo-Frontiers 2011, Dallas, Texas, March 10-13, 2011.
10. 5th Pan-American Conference on Teaching and Learning of Geotechnical Engineering, October 2-6, 2011, Toronto, Ontario, Canada.
11. GeoFlorida 2010, February 20-24, 2010 | Orlando, Florida, United States
12. 5th international conference on Recent advances in geotechnical earthquake engineering and soil dynamics, San Diego, California, May 24-29, 2010.
13. GeoCongress 2008, March 9-12, 2008 | New Orleans, Louisiana, United States
14. 17th, International Conference on Soil Mechanics & Geotechnical Engineering: Alexandria, Egypt, 5-9 October 2009.
15. 7th International Symposium on Field Measurements in Geomechanics (FMGM 2007), held 24-27 September 2007, Boston, Massachusetts.

Workshops and training programs:

- Bentley Webinar: "**PLAXIS MoDeTo CONNECT Edition Online**" June 30th, 2019.
- **USUGER Geotechnical Engineering Teaching Strategies and Resources Workshop,** U.S. National Science Foundation, Minnesota, USA, Feb. 25th, 2020.
- Attended "**ADSC 2016 Foundation Engineering Faculty workshop**" Chattanooga, USA, June 5-10, 2016.
- 26th World Road Congress 2019, Abudhabi, UAE October 2020.
- Bridge Deterioration Modeling Using the Markov Chains Stochastic Model, Seminar By Dr. Saleh Abu Dabous, Ph.D., Department of Civil and Environmental Engineering, University of Sharjah

- 2nd, Sciences, and Engineering Research Groups Forum, 9th of April, 2017, organized by Research Institute of Sciences (RISE), Engineering College, University of Sharjah.
- Seminar presented by CEMENTAID international company for cement additives, March, 21st in the Civil and Environmental Department, College of Engineering, University of Sharjah.
- Training program "University of Sharjah Policies and Regulations for Faculty Promotion" Organized by the Center of Continuing Education and Professional Development on November 16th, 2017 for four hours.
- Training Program "University regulations regarding Staff teaching " Organized by the Center of Continuing Education and Professional Development on October 4th, 2017 for four hours.
- 3rd Sciences and Engineering Research Groups Forum, 9th of April, 2017, organized by Research Institute of Sciences (RISE), Engineering College, University of Sharjah.
- Workshop on Fiber Reinforced Concrete (FRC): Materials, Applications, and Design Aspects Building M9 – Al-Bayruni Hall, 23rd April 2018.
- "UAV Innovation in the Remote Sensing Process & Drones for Geomatics—Capacity Building Initiative by Arabian Gulf University" March 1st, 2018, at 10:00 am Al-Bayrouni Hall, M9-Ground Floor.
- Attended "Global Infrastructure Congress, IQPC, at the Grand Hyatt Hotel, Dubai, United Arab Emirates from 2nd – 3rd April 2018.
- Attended "Underground Infrastructure and Deep Foundations, Middle East" 13-15 November 2017 Le Royal Meridien Beach Resort & Spa, Dubai, United Arab Emirates
- Internal Auditing "ISC/IEC 17025: 2005" March 8-9, 2015. Experts Quality and
- Marketing.
- Quality Control Charts and Proficiency Test (PT), "ISC/IEC 17025: 2005" September 22, 2014. Experts Quality and Marketing.
- Dynamic Triaxial, Wille Geotechnik Germany, July 22-24, 2013.
- Estimation of Uncertainty of Measurements, "ISC/IEC 17025: 2005" June 3, 2014. Experts Quality and Marketing.
- General Requirements for the Competence of the Testing Laboratories, "ISC/IEC 17025: 2005" December 13, 2013. Experts Quality and Marketing.
- "Applying National Academic Standards", 15 hours, 9/9/2012-11/9/2012, Mansoura University, Mansoura, Egypt.
- "Communication Skills", 15 hours Mansoura University, Mansoura, Egypt.
- "Technology Use in Teaching", 15 hours, Mansoura University, Mansoura, Egypt.
- "The Credit Hour System", 15 hours, Mansoura University, Mansoura, Egypt.
- "Scientific Publication", 15 hours, Mansoura University, Mansoura, Egypt.
- "Managing Time and Meetings", 15 hours, Mansoura University, Mansoura, Egypt.
- "University Legal and Financial Aspects", 15 hours, Mansoura University, Mansoura, Egypt.

Journal and Conference Proceedings Reviewer

- **Associate Editor,** Innovative Infrastructure Solutions.
- **Scientific Committee member** for The 5th International Conference on Geotechnical Research and Engineering (ICGRE'20) will be held in Lisbon, Portugal (October 2020).
- **Editor** of ASCE GPS of GeoChina 2016 International Conference on Sustainable Civil Infrastructures: Innovative Technologies for Severe Weathers and Climate Changes, Shandong, China July 25-27, 2016.
- Korean Society of Civil Engineers Journal (KSCE Civil Engineering Journal).
- Geotechnical and Geological Engineering Journal.
- Australian Journal of Civil Engineering Journal.

- Construction and Building Materials Journal.
- Sustainable Civil Infrastructures Journal.
- Alexandria Engineering Journal.
- 8th Mansoura International Engineering Conference, Sharm El-Sheikh, 2015.
- International Conference on Advances in Sustainable Construction Materials & Civil Engineering Systems (ASCMCES-17), April 18th– 20th, 2017.
- ASCE Geo-Congress conference held March 2019 in Philadelphia, PA, USA.

Graduate Student Supervision:

MSC Students

Active

1- **Student Name:** Nourhan Sheleh**,**
Thesis title: Numerical Investigation of Suction Caissons for Offshore Applications" University of Sharjah.
University: University of Sharjah, UAE

2- **Student Name:** Mohamed Esam**,**
Thesis title: Dynamic Cone penetrometer correlations with other penetrating field testing
University: Mansoura University, Egypt.

3- **Student Name:** Omar Adel Mostafa (U19104073)
Thesis title: 3D Finite Element Modeling of Suction Caissons used as Foundations for Offshore Wind Turbines in Clayey Soils
University: University of Sharjah, UAE.

4- **Student Name:** Abdalla Y. lmarzooqi (U19102452)**,**
Thesis title: Assessment of Recycled Concrete Aggregates as Base Materials for Pavement Structures in the UAE
University: University of Sharjah, UAE

5- **Student Name:** Rajaa K. Rammal (U19104269)
Thesis title: Employing Alkali-Activated Binders in the Construction of Deep Sand Mixed Columns
University: University of Sharjah, UAE

2020

6- **Student Name:** Rami Alsodi (U15200111)
Thesis Title: Using (EICP) to Mitigate Fugitive Dust in the United Arab Emirates
University: University of Sharjah, UAE

7- **Student Name:** Bara' Jarah (U16200661)
Thesis Title: Stabilization of UAE Sandy Soils Using Alkali-Activated Binders
University: University of Sharjah, UAE

2019

8- **Student Name:** Haider Rohy (U14210513)
Thesis Title: Soil Improvement using (EICP) for Pavement Applications
University: University of Sharjah, UAE

9- **Student Name:** Emran Alotaibi (U16200658)
Thesis Title: Protection of Buried Pipelines Using Geosynthetic Reinforced Sand
University: University of Sharjah, UAE

10- **Student Name:** Mohammed Refaei (U16200722)
Thesis Title: Stabilization of Sandy Soil Using Biopolymer
University: University of Sharjah, UAE

11- **Student Name:** Mahmoud Abdelmogny
Thesis Title: Effect of CFA pile installation on adjacent structures,
University: Mansoura University, Egypt

2018

12- **Student Name:** Reham Abd El-Daiem **(2015-2018)**
Thesis Title: Microbial Sand Dune Fixation" Faculty of Science
University: Mansoura University, Egypt.

13- **Student Name:** Mohamed Kinawy**,**
Thesis Title: Effect of moisture movement on foundation in moisture sensitive soils (Laboratory study).
University: Mansoura University, Egypt

14- **Student Name:** Heba Mostafa**,**
Thesis Title: Effect of moisture movement on foundation in moisture sensitive soils (Numerical study)
University: Mansoura University, Egypt

2017

15- **Student Name:** Zahra Abdelrahman**,**
Thesis Title: Studying arching effects on Board piles in granular soils
University: Mansoura University, Egypt

2016

16- **Student Name:** Omar Shawki**,**
Thesis Title: New Generation of Nuclear Power Plants an-Insight into Foundation Behavior
University: Mansoura University, Egypt

Doctorate

Active

1- Ph.D. Student: **Zahra Kamel**, Behavior of battered piles" (2018-now) Faculty of Engineering, Mansoura University, Egypt.
2- Ph.D. Student: **Emran Alotaibi,** University of Sharjah, UAE.
3- Ph.D. Student: **Abdulrahman Metawa,** University of Sharjah, UAE.

Examining Committee Member

2020

1- Student Name: Ahmed Mohsen Khalil,
Thesis Title: Dynamic Properties of Soil in UAE from Field and Laboratory Tests
University: American University of Sharjah, UAE

2- Student Name: Ahmad Ghassan Shabib,
Thesis Title: Investigating the Effect of the Chemical Composition of Substrates on the Performance of Bio-electrochemical Anaerobic Digestion
University: University of Sharjah, UAE

3- Student Name: Mohammed Wajeeh Younis Al Ani,
Thesis Title: Assessment of Thermal Cracking for Asphalt Binders in the UAE Using Dynamic Shear Rheometer
University: University of Sharjah, UAE

2019

4- Student Name: Myasar AbulKhair,

Thesis Title: Evaluation of Asphalt Mixtures with Steel Slag Aggregates Using Advanced Characterization Tests

University: University of Sharjah, UAE

Research-Based Undergraduate Senior Graduation Projects

1- Crude extraction of urease enzyme from locally grown seeds in UAE, applied for the Sharjah Sustainability Award, category of Applied Scientific Research (2020).
2- The use of Bacterial activity to enhance the soil mechanical properties, applied for 7th Undergraduate Research Competition, Abu Dhabi, UAE (2020).
3- The use of Alkali Activated polymer for use in Deep soil mixing, applied for the Sharjah Sustainability Award, category of Applied Scientific Research (2019).
4- Biopolymer Modified EICP Soil Stabilization, joined 7th Undergraduate Research Competition, students were qualified for the second stage.
5- Innovative use of 3D printing for sustainable soil improvement techniques won first place in 7th Undergraduate Research Competition held in Abu Dhabi, UAE.
6- Bio-Inspired 3D printing honeycomb soil reinforcement, Won Third place in the competition held in the 2nd Engineering Undergraduate Design Projects Exhibition 2019 (EUDPE 2019) held in May 2019, University of Sharjah, UAE.

Industry Experience

March 2014 – Sep. 2016 — **Director** of Soil Mechanics and Foundation Laboratory, Mansoura University

Jan. 2013-Now — **Partner, ArabConsult, Mansoura, Egypt** conducting consulting services starting from preparing geotechnical investigation reports for schools, residential houses, and hospitals to the structural design of multi-story residential houses, water tanks, hospitals, shoring systems, Hotels, Educational facilities, etc.

May 2009- Jan. 2011 — **Staff Engineer, Edward Kavazanjian Consulting, Arizona, USA** reviewed and checked a cantilever sheet pile wall design for a litigation case. The cantilever sheet pile was built inside the irrigation canal. Performed analyses for the hydraulic performance evaluation of the operations (OPS)/leachate collection and removal system (LCRS) layer for a **Landfill located in southern California**. Performed and checked slope stability design for a **landfill cover** located in southern California for a litigation case. **Design MSE walls for several projects.**

June 2008-Sep. 2008 — **Intern Engineer**, **GeoSyntec Consultants**, Huntington Beach, CA Performed field observation of the **landfill cover system** under construction. Performed and assisted in a variety of office tasks ranging from AutoCAD drafting to seismic response analysis using finite difference methods to transient and steady-state flow modeling using the finite element method. Assisted in geotechnical field exploration, in-situ water sampling, and water well observation. Assisted with the preparation of a proposal and presentation for landfill seismic analysis.

Sep. 2004-May 2006 — **Staff Geotechnical Engineer**, **Mansoura University Geotechnical Simulation Laboratory**

	Involved in soil testing, preparing geotechnical investigation reports, and designing foundations. Involved in running a centrifuge geotechnical testing facility available at Mansoura University.
Graduate Courses	**Arizona State University:** Soil Mechanics for Unsaturated Soils, Geotechnical Earthquake Engineering, Soil Shear Strength and Slope Stability, Foundation Engineering, Geoenvironmental Engineering, Statistics Applications for Pavement Engineering, Structural Dynamics, Stress Analysis, Advanced Seismology, Consolidation and Settlement of Soils, Advanced Soil Mechanics, Advanced Geotechnical Testing, Pavement Design and Analysis, Geosynthetics Design, Developing Software Engineering Applications, Constitutive Modeling, Soil Improvement Techniques. **Mansoura University:** Advanced Geotechnical Engineering Laboratory, Soil Dynamics, Soil Plasticity, Centrifuge Soil Testing.
Computer Skills	FLAC2D, Plaxis 2D& 3D, Plaxis LE, Slide v 6.0, SLOPE/W, SHAKE2000, D-Mod 2000, SeismoSignal, Lpile, SEEP/W, Vadose/W, HELP, AutoCAD, Sap 2000.

University and Department Service Activities

- Member of the hiring committee (2020/2021)
- Member of the accreditation committee (2020/2021)
- Chair of the college faculty social affairs committee (2020/2021)
- Member of the department graduate studies committee (2019/2018)
- Member of Department Research Committee (2019/2018)(2018/2017)
- Chair of the department student affairs committee.
- Member of the college student affairs committee (2019/2018)
- Member of the steering committee for reaccreditation for Master and BSc degrees (MOHESR steering committee) (2018/2019)
- Member in Lab and Commercial Testing Committee, CEE (2018/2017)
- Participated in the organization of the 1st senior design exhibition for the college of Engineering (2018/2017)
- Participated in the organization of the 1st Eng. clubs exhibition: 3D-printing and Drones (2019/2018)
- Community Service & Outreach Committee (Department Level) (2018/2019)

References

Prof. Edward Kavazanjian, Jr., Ph.D., P.E., D.GE., NAE
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Professor of Geotechnical Engineering
School of Civil and Mechanical Engineering
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