	SHABAN ZANGENA DR.		
	PERSONAL INFORMATION		
	NAME: Shaban Birthdate: 05/05 Nationality: Liby Residence: Al-Y Scopus ID: 5668	Ismael Albrka Ali Zangena /1983 Ghat/Libya yan ahmadi, Ibra, 400. Sultanate of Oman.	
	WORK EXPERIENCE		
	2024 – Present	A'Sharqiyah University	
LANGUAGES		Acadmic staff at Civil Engineering Department	
Tamazight language Writing Reading Speaking Arabic language Writing Reading Speaking English language Writing Reading Reading Reading	2017 - 2024 2012 - 2016	NEAR EAST UNIVERSITY Vice-Chair of Civil Eng. & Head of Transportation Engineering unit, Nicosia	
Speaking  Malayu language Writing Reading Speaking  Turkish language		<ul> <li>Teaching Fighway and Transportation Engineering to undergraduate students at the Faculty of Engineering, National University of Malaysia (UKM), Malaysia.</li> <li>Converting theses to books and writing research papers at the Sustainable Urban Transport Research Centre (SURRA), Faculty of Engineering, National University of Malaysia (UKM), Malaysia.</li> </ul>	
Writing Reading Speaking CONTACTS	2012 - 2015	<ul> <li>The National University of Malaysia (UKM)</li> <li>Laboratory Supervises , Bangi</li> <li>Supervises postgraduate students in the asphalt laboratory.</li> </ul>	
□ Nicosia □ +905428880237 □ Shabarofking10@gmail.com in:https://www.researchgate.net/pr ofile/Shaban-Ali □ https://scholar.google.com.my/ci tations?user=fJRrw5wAAAAJ&hl=en	2011 - 2012	Higher Institute of Sciences and Technology/Albrket Collaborator member of academic staff, Ghat  • Teaching undergraduate level Courese:  > Survey engineering,  > Environmental pollution  > Geology courses.	
	2006 - 2008	Intermediate Center for Comprehensive Vocations/Albrket Collaborator member of the teaching staff, Ghat Collaborator member of the teaching staff teaching survey engineering.	
		Land Registration Authority	

	2005 – 2009	Technical Engineer, Surveyor and Head of real estate allocation committee	
	2005 2000	Al- Etihad Alafriqi Engineering Works Office	
	2005 - 2009	Engineer  Engineer	
EDUCATION			
2012 - 2016	Transportation	egree program in Civil Engineering ( Highway and Engineering)  iversity of Malaysia (UKM), Malaysia, Bangi	
2009 - 2011	Master of Engineering in Civil Engineering (Highway and Transportation Engineering) The National University of Malaysia (UKM), Malaysia, Bangi		
2002 - 2005	H.D in Civil Engineering, Higher Institute of Sciences and Technology, Bent Bay/Wadi Al-Hayat, Libya		
COMMITTEES AN	ND INSTITU	TIONS	
2019 - 2020	The Near East University		
	1- The 2 <sup>nd</sup> International Conference of Environment: Survival and Sustainability, 7th to 11th October 2019 Nicosia, Northern Cyprus, Cyprus.		
	2- The 2nd International Conference on Water Problems in the Mediterranean Countries (WPMC), Lefkoşa, Northern Cyprus, 6-10 May 2019.		
	3- The 2 <sup>nd</sup> International Conference on The Cyprus Issue Past, Present and the Vision For the Future, Lefkoşa, Northern Cyprus,1-3 Apr 2019.		
		ernational Conferences on Natural Resources and Sustainable ital Mangement (NRSEM-2021)	
2015 - 2019	American Socie Professional Mer	ety of Civil Engineering (ASCE) mber,	
2012– Present	Member of Sust Member.	tainable Urban Transport Research Centre (SURRA) UKM.	
2010– Present	Ghat Society of Member.	Civil Engineering	

## **ACADEMIC INDEXING**

#### **GOOGLE SCHOLAR INFO**

Citations 1180 - H-index 20 - i10-index 29

### WEB OF SICNCES INFO

Citations 225 - H-index 9

#### **SCOPUS INFO**

Citations 275 - H-index 10

# **FOUNDS & PROJECTS**

## 2019 THE MIDDEL EAST COLLOGE OMAN

Co-Supervisor, Muscat

Antecedents and Consequences of Car Driver Behaviours towards RTA Involvement among the Omani public" Grant fund by The Research Council (TRC), Sultanate of Oman with a total Budget of 3100 OMR (8606 USD).

### 2014 THE NATIONAL UNIVERSITY OF MALAYSIA (UKM)

A principal investigator, Bangi

The principal investigator of a project with the title of Finite element method application on modified asphalt mixture bynano-particles and polymer materials . Project code: 03 -01 -02 - SF 0999, funded by the ministry of high education in Malaysia with a budget of RM 250 ,000 (US\$ 79 ,365 ). The project leader is Prof. Dr. Eng. Amiruddin Ismail.

### MSC THESIS SUPERVISION

- ✓ Evaluation and Analysis of Factors Affecting Road Traffic Accidents in Tripoli-Libya. M.SC. Thesis.
- ✓ Evaluation of the Traffic Flow at Signalized Intersections, a Case Study of Kano City Nigeria. M.SC. Thesis.
- ✓ Characterization of the Performance of Asphalt Binder Modified with Nano-Composites. M.SC. Thesis.
- ✓ Evaluate the Effect of Moisture and Ageing Condition on Nanoparticles Modified Asphalt Mixtures. MSc. Thesis.
- ✓ Appraisal of Factors Affecting Delays in Road Constructions- A Case Study of Peshawar City. MSc. Project.
- ✓ Risk Management Practice: An Assessment of the TRNC Construction Industry. M.SC. Project.
- ✓ Experimental Investigation of Asphalt Mixture Modified with Waste Plastic Bags. M.SC. Thesis.

- ✓ Evaluation of Traffic Lights Operating System in Nicosia Using Transyt-7F Software. M.SC. Thesis.
- ✓ Transport Safety Assessment of Road Adaptive lighting Implementation MSc. Project.
- ✓ Prediction of The Weathering (Temperature & Amp; Rainfall) Effects on Asphalt Binders Modified With ENR Using Adaptive Neuro-Fuzzy Inference System. MSc. Thesis.
- ✓ Modelling of Complex Modulus and Phase Angle of Polymer Nanocomposite Modified Bitumen. MSc. Thesis.
- ✓ Modelling of viscoelastic properties of modified asphalt cement. MSc. Thesis
- ✓ Modelling of Different Nano -Composite Modified Bitumen Using Computational Intelligence -An Ensemble Learning Approach. MSc. Thesis
- ✓ Artificial intelligence Based Hybrid Models For Classification Of Road Accident Severity. MSc.Thesis.
- ✓ Awareness of Traffic Safety and Evaluation among Rivers in the City of Mogadishu Somalia. MSc. Thesis.
- ✓ Multi-Criteria Decision Making For Contractor Selection by Using Analytical Hierarchy Process (AHP) In Erbil- Iraq . MSc Thesis.
- ✓ Study of Service Quality and Customer Satisfaction of Using Public Transport in Lebanon. MSc Thesis.

### PHD THESIS SUPERVISION

- ✓ The performance characteristics of polymer nanocomposite modified binders and asphalt mixtures. PhD Thesis.
- ✓ Investigation on The Performance of Polymer Modified Asphalt Binder. PhD Thesis
- ✓ The Engineering Evaluation of Polymer Nanocomposite Modified Asphalt Using WMA . PhD Thesis
- ✓ The expert system of \*\*\*\*\*\*\* Design. PhD Thesis Ongoing
- ✓ Development of Public Transportation in North Cyprus. PhD Thesis. Ongoing.
- ✓ The effects of \*\*\*\*\*\* on the performance of modified Asphalt binder and mixture with Polymer/ Nanomaterials. PhD Thesis. Ongoing.

## INTERNATIONAL CONFERENCES

- The 3<sup>rd</sup> International Conference of Water Problems in Mediterranean Countries (WPMC-2023), Nicosia, 14 16 December 2023.
- The 6<sup>th</sup> International Conference on Natural Resources and Sustainable Environmental Management (NRSEM-2023), Nicosia, 15 17 December 2023
- Scientific Conference on Water Resources and Water Security in Libya, Tripoli 15-17 May 2023.
- The Second Educational Scintific Conference on Eductional Evaluation, Ghat Faculty of Education, Ghat 15 March 2023.

- Third International Conference On "Cyprus Issue: Environmental Challanges And Energy Security" (EEWRC 2022) Near East University, 21-23 December 2022.
- The international Workshop on Advnaces in laboratory Testing of liquefied Soils, Kyrenia, Cypurs 17 september 2022.
- 2<sup>nd</sup> Nature Inspired Solutions for the Built Environmentl Conferenc (NISE2022) Acapullco Resort Convention SPA Hotel,16 September 2022.
- 2<sup>nd</sup> National Civil Engineering Symposium, Chamber of Civil Engineers, Acapullco Resort Convention SPA Hotel,14-15 September 2022.
- Third conference of Cosmetology and Dermatology, Zamzam Company, 11-16 Septmber, Sharm Elsheikh, Egypet.
- 1<sup>st</sup> National Civil Engineering Symposium, Chamber of Civil Engineers, Acapullco Resort Convention SPA Hotel,25-26 June 2021.
- 5<sup>th</sup> International Conference on New Advances in Civil Engineering (ICNACE'19) which will be held in Kyrenia, North Cyprus on 8 10 November 2019.
- The 2<sup>nd</sup> International Conference of Environment: Survival and Sustainability, 7th to 11th October 2019 Nicosia, Northern Cyprus, Cyprus.
- The 2<sup>nd</sup> International Conference of Environment: Survival and Sustainability. October 7-11, 2019 at Near East University, Nicosia Northern Cyprus.
- The 2<sup>nd</sup> International Conference on Water Problems in the Mediterranean Countries. 6-10 May 2019 at Near East University, Nicosia, Northern Cyprus.
- The 2<sup>nd</sup> International Conference on "The Cyprus Issues: Past, Present and the Vision for the Future". 1-3 April 2019 at Near East University, Nicosia, Northern Cyprus.
- Building up Efficient and Sustainable Transport Infrastructure 2017 (BESTInfra2017) Prague, Czech Republic September 21-22, 2017.
- Bearing capacity of roads, railways and airfields: proceedings of the 10th international conference on the bearing capacity of roads, railways and airfields (bcrra 2017), june 28-30, 2017, Athens, Greece.
- Asia international multidisciplinary conference (AIMC 2017), 1-2 May 2017, University Teknologi Malaysia.
- The 10<sup>th</sup> Malaysian Universities Transport Research Forum Conference 2015 (MUTRFC 2015). 24-25 November 2015, Shah Alam, Malaysia
- International Conference on Innovation Trends in Multidisciplinary Academic Research (ITMAR) 20-21 October 2015 Global Illuminators, Istanbul, Turkey.
- The 6<sup>th</sup> International Conference Bituminous Mixtures and Pavements Thessaloniki, Greece, 10-12 June 2015.
- International Technical Conference (ITC), Korea, 17-19 November 2014

- AFAP Conference on current and emerging trends in science and engineering 2014, 8th March 2014. Batam, Indonesia.
- The 8<sup>th</sup> Malaysian Universities Transport research form conference 2013 (MUTRFC 2013). 23-24 December 2013, National University of Malaysia, Bangi, Malaysia., Bangi, Malaysia, 4 5 October 2011, (Proc CD).

# PUBLICATIONS IN WEB OF SCINCES (WOS)

- 1) Uwanuakwa, I. D., Adamu, M., Ali, S. I. A., Akpinar, P., Hasan, M. R. M., Shariff, K. A., ... & Haruna, S. I. (2023). Effect of polymer molecular weight on the rheology of SBS polymer-modified asphalt binder. Innovative Infrastructure Solutions, 8(3), 89. **ESCI**
- 2) Ali, S. I. A., Alothman, D., & Gökçekuş, H. (2023). Rheological Performance of ZycoTherm/Nano-Silica Composite Modified Binders at High and Low Temperatures. Turkish Journal of Civil Engineering, 34(2), 77-102. **SCIE Q4**
- 3) Alothman, D., Gökçekuş, H., & Alı, S. I. A. (2022). Rheological Properties of Hot and Warm Asphalt Binder Modified with Nanosilica. Materials Science, 28(4), 496-505.
- 4) Alas, M., Abba, S. I., Ismael Albrka Ali, S., Rahim, A., & Yusoff, N. I. M. (2022). Evaluating the Performance of Aluminum Oxide Nanoparticle-Modified Asphalt Binder and Modelling the Viscoelastic Properties by Using Artificial Neural Networks and Support Vector Machines. Advances in Materials Science and Engineering, 2022.
- 5) Abunassar, N., Alas, M., & Ali, S. I. A. (2023). Prediction of Compressive Strength in Self-compacting Concrete Containing Fly Ash and Silica Fume Using ANN and SVM. Arabian Journal for Science and Engineering, 1-14. **SCIE-Q2**
- 6) Uwanuakwa, I. D., Busari, A., Ali, S. I. A., Mohd Hasan, M. R., Sani, A., & Abba, S. I. (2022). Comparing Machine Learning Models with Witczak NCHRP 1-40D Model for Hot-Mix Asphalt Dynamic Modulus Prediction. Arabian Journal for Science and Engineering, 47(10), 13579-13591. SCIE-Q2
- 7) Haruna, S. I., Malami, S. I., Adamu, M., Usman, A. G., Farouk, A. I. B., Ali, S. I. A., & Abba, S. I. (2021). Compressive strength of selfcompacting concrete modified with rice husk ash and calcium carbide waste modeling: a feasibility of emerging emotional intelligent model (EANN) versus traditional FFNN. Arabian Journal for Science and Engineering, 46(11), 11207-11222.**SCIE-Q2**
- 8) Mustafa, A. L. A. S., ALBRKA, A., & GÖKÇEKUŞ, H. (2020). The High Temperature Performance Evaluation of Polymer/Nanocomposite Modified Asphalt Cement. Teknik Dergi, 33(4). **SCIE-Q4**
- 9) Uwanuakwa, I. D., Ali, S. I. A., Hasan, M. R. M., Akpinar, P., Sani, A., & Shariff, K. A. (2020). Artificial intelligence prediction of rutting and fatigue parameters in modified asphalt binders. Applied Sciences, 10(21), 7764. **SCIE-Q2.**
- 10) Al-Mansob, R. A., Ismail, A., Rahmat, R. A. O., Borhan, M. N., Alsharef, J. M., Albrka, S. I., & Karim, M. R. (2017). The performance of epoxidised natural rubber modified asphalt using nano-alumina as additive. Construction and Building Materials, 155, 680-687. **SCIE-Q1**

- 11) Ali, S. I. A., Ismail, A., Karim, M. R., Yusoff, N. I. M., Al-Mansob, R. A., & Aburkaba, E. (2017). Performance evaluation of Al2O3 nanoparticlemodified asphalt binder. Road Materials and Pavement Design, 18(6), 1251-1268. **SCIE-Q2**
- 12) Al-Mansob, R. A., Ismail, A., Yusoff, N. I. M., Rahmat, R. A. O., Borhan, M. N., Albrka, S. I.,& Karim, M. R. (2017). Engineering characterisation of epoxidized natural rubber-modified hot-mix asphalt. Plos one, 12(2), e0171648. **SCIE-Q1**
- 13) D. I., Wu, J., Liu, Q., Hassan, N. A., Yusoff, N. I. M., & Ali, S. I. A. (2016). Physical and rheological characteristics of polymer modified bitumen with nanosilica particles. Arabian Journal for Science and Engineering, 41(4), 1521-1530. **SCIE –Q3**
- 14) Alas, M., Ali, S. I. A., Abdulhadi, Y., & Abba, S. I. (2020). Experimental evaluation and modeling of polymer nanocomposite modified asphalt binder using ANN and ANFIS. Journal of Materials in Civil Engineering, 32(10), 04020305.

## PUBLICATIONS (SCOPUS+ INTERNATIONAL)

- 1. Ali, A. A., Heneash, U., Hussein, A., Ali, S. I. A., & Khan, S. (2023). Models Development for Asphalt Pavement Performance Index in Different Climate Regions Using Soft Computing Techniques. Journal of Soft Computing in Civil Engineering, 7(1), 20-42. **SCOPUS**
- 2. Al-Mansob, R. A., Jia, L. Y., Alsharef, J. M., Jassam, T. M., Ng, J. L., Ali, S. I. A., & Surol, S. B. (2021, October). Effects of carbon-nanotube and lime on the weak soil stability. In AIP Conference Proceedings (Vol. 2401, No. 1, p. 020011). AIP Publishing LLC. **SCOPUS**
- 3. Al-Mansob, R. A., Wong, W. F., Alsharef, J. M., Jassam, T. M., Ng, J. L., Ali, S. I. A., & Yusof, Z. B. M. (2021, October). Unconfined compressive strength characteristic of soft soil mixed with lime and nano alumina. In AIP Conference Proceedings (Vol. 2401, No. 1, p. 020010). AIP Publishing LLC. SCOPUS
- 4. Malami, S. I., Anwar, F. H., Abdulrahman, S., Haruna, S. I., Ali, S. I. A., & Abba, S. I. (2021). Implementation of hybrid neuro-fuzzy and selfturning predictive model for the prediction of concrete carbonation depth: A soft computing technique. Results in Engineering, 10, 100228. **SCOPUS**
- 5. Ali, S. I. A., Abubaker, A., & Alshetwi, A. B. Z. (2020, March). Characterization of asphalt binders blended with nanomaterial and polymer. In IOP Conference Series: Materials Science and Engineering (Vol. 800, No. 1, p. 012002). IOP Publishing. **SCOPUS**
- 6. Ali, S. I. A., Elturki, F. A. A., & Jibrel, S. N. (2020, March). Analysis of increment of road traffic accidents in Libya: Case study city of Tripoli. In IOP Conference Series: Materials Science and Engineering (Vol. 800, No. 1, p. 012003). IOP Publishing. **SCOPUS**
- 7. Karim, F., & Ali, S. I. A. (2020). Evaluation of Most Influential Factors Affecting Road Traffic Accidents in Sidon, Lebanon. Jurnal Kejuruteraan, 32(3), 467-473. **SCOPUS**
- 8. Alas, M., & Ali, S. I. A. (2019). Prediction of the high-temperature performance of a geopolymer modified asphalt binder using artificial neural networks. Int. J. Technol, 10(2), 417-427. **SCOPUS**
- 9. Alshetwi, A. B., Borhan, M. N., Ali, S. I. A., Irtema, H. I. M., Mohashhash, B., & Rahmat, R. A. A. O. (2018). Prototype Web-Based Expert System For Optimizing The Road Network Of Developing Countries. Journal of Engineering Science and Technology, 13(12), 4053-4065. **SCOPUS**

- 10. Alfakhri, A. Y., Ismail, A., Khoiry, M. A., Albrka, S. I., Alshetwi, A. B., & Alghadi, M. S. (2018). A Study of Identifying Significant Variables of Delays in Road Construction Via Structural Equation Modelling (SEM). International Journal of Engineering & Technology, 7(2.29), 893-898. **SCOPUS**
- 11. Ali, S. I. A., Ismail, A., Yusoff, N. I. M., Hassan, N. A., & Ibrahim, A. N. H. (2016). Characterization of the performance of aluminum oxide nanoparticles modified asphalt binder. Jurnal Teknologi, 78(4). **SCOPUS**
- 12. Ali, S. I. A., Reşatoğlu, R., & Tozan, H. (2018). Evaluation and analysis of traffic flow at signalized intersections in Nicosia using of SIDRA 5 Software. Jurnal Kejuruteraan, 30(2), 171-178. **SCOPUS**
- 13. Irtema, H. I. M., Ismail, A., Borhan, M. N., Abdelsalam, H. M., Alshetwi, A. B., Albrka, S. I., & Das, A. M. (2018). Perceptions Passengers on Service Quality: Public Transport in Kuala Lumpur. International Journal of Engineering & Technology, 7(2, 29), 865-870. **SCOPUS**
- 14. Albrka , S. I., Ismail, A., Yusoff, N. I. M., Alhamali , D. I., & Musbah , A. (2016). Performance properties of ASA polymer modified asphalt binders and mixtures . Journal of Engineering Science and Technology, 11(8), 1155-1164. **SCOPUS**
- 15. Mubaraki , M ., Ali , S. I. A., Ismail , A., & Yusoff , N. I. M . (2016 ). Rheological evaluation of asphalt cements modified with ASA polymer and Al2 O3 nanoparticles. Procedia engineering, 143, 1276-1284. **SCOPUS**
- 16. Irtema , H. I. M., Ismail , A., Albrka , S. I., Ladin , M. A., & Yahia , H. A. (2015). Evaluating the performance of traffic flow in four intersections and two roundabouts in Petaling Jaya and Kuala Lumpur using Sidra 4.0 software. Jurnal Teknologi, 72(4). **SCOPUS**
- 17. Alhamali , D. I., Yusoff , N. I., Wu, J., Liu, Q., & Albrka , S. I. (2015 ). The effects of nano silica particles on the physical properties and storage stability of polymer-modified bitumen. Journal of Civil Engineering Research, 5(4A), 11-16. **SCOPUS**
- 18. Albrka, S. I., Ismail, A., Yahia, H. A., & Ladin, M. A. (2014). Application of transyt -7f on signalized road junction networks in Shah Alam and Petaling Jaya. Jurnal Teknologi, 69(2). **SCOPUS**
- 19. Yahia , H. A., Ismail , A., Albrka , S. I., Almselati , A. S., & Ladin , M. A. (2014). Attitudes and awareness of traffic safety among drivers in Tripoli -Libya . Research Journal of Applied Sciences, Engineering and Technology , 7(24), 5297-5303. **SCOPUS**
- 20. Ladin, M. A., Albrka, S. I., Ismail, A., & Rahmat, R. A. A. O. (2014). Developing a Model for Planting Trees Along the Walkway. Jurnal Teknologi, 69(2). **SCOPUS**

#### **VOLUNTEER WORK**

#### **ADVIOSR & CONSULTANT**

Internatioal Student Association (CISA) | 2019 - Present

Organizing free scientific seminars for students and any duty assigned by the director.

#### **ADVISOR**

Iragi students community | 2019 - 2020

Guiding students and solving academic problems in the university

#### **ADVIOSR & CONSULTANT**

Libyan students community | 2019 – Present

Guiding students and solving academic problems in the University

#### **MEMBER**

Albrket Youth Gathering | 2012 - Present

Encouraging the young generation to improve the community.

#### **MEMBER**

Albarket dialogue and reconcilation committee | 2011 – 2012

Working to prevent any conflicts in the region

### **ACHIEVEMENTS**

#### Publication Award 2021-2022

**Near East University** 

#### **Publication Award 2020-2021**

**Near East University** 

#### **Publication Award 2019-2020**

**Near East University** 

#### **Publication Award 2018-2019**

Best young researcher in the Near East University

#### **Best Supervision 2018**

Certificate of appreciation for supervising MSc students from the dean of faculty of Civil and Environmental Eng. 2018.

#### **Best Paper Award 2014**

The AFAP Conference on current emerging Technology, Science and Engineering (ACCETSE2014)

## **REFERENCES**

Name: Assist. Prof.Dr. Mustafa Alas	Name: Assoc. Prof. Dr. Nur Izzi Mod Yusif
Institution: Near East University	Institution: The National University of Malaysia

Tel: +905488630780

Email: mustafa.alas@neu.edu.tr

Name: Prof. Dr. Gözen Elkiran

Name: Prof.Dr. Qasim Zeeshan

**Tel:** +60192891221

Email: izzi@ukm.edu.my

**Institution**: Near East University Institution: Eastern Mediteranean University

## **COURSES OFFERED IN SUMMER 22-23**

➤ SOIL MECHANICS I (CIV361) - BSC

FINAL PROJECT IN TRANSPORATION (CIV498) - BSC

## COURSES OFFERED IN FALL 2022-2023

- > TRANSPORATION ENGINEERING (CIV351) BSC
- > HIGHWAY DESIGN (CIV457) BSC
- > AIRPORTS & RAILWAYS (CIV459) BSC
- Final PROJECT IN TRANSPORATION (CIV498) BSC
- > PAVEMENT MANAGMENT SYSTEM (CIV557 & 657) MSC & PHD

# **COURSES OFFERED IN SPRING 22-23**

- > SURVEYING ENGINEERING (CIV204) BSC
- > TECHNICAL REPORTS WRITING (CIV403) BSC
- ➤ GEOLOGY FOR CIVIL ENGINEERING (GEO102)
- ➤ HIGHWAY SAFETY (CIV550+CIV650) MSC & PhD

# **COURSES OFFERED IN SUMMER 21-22**

- ➤ AIRPORTS & RAILWAYS (CIV459) BSC
- > TRANSPORATION ENGINEERING (CIV351) BSC
- ➤ ADVANCE TRANSPORTATION ENGINEERING (CIV551& CIV651) MSC & PHD