

Prof. Zouhair Al-qudah
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Education

- PhD** Electrical Engineering, Southern Methodist University, **Texas, U.S.A.** May 2013
GPA: 3.89/4.0
PhD Dissertation: *Dirty Paper Coding and Interference Cancellation for Wireless Communications.*
- M.Sc.** Electrical Engineering, Kalmar University College, **Sweden.** Dec. 2006
GPA: 4.5/5.0
Master Thesis: *Performance of Multilevel Coded Modulation over AWGN and Multipath Fading Channels.*
- B.Sc.** Communication Engineering, Yarmouk University, Irbid, **Jordan.** Sep. 2002
Average: 71.4 % (**Good**)

Employment History

- Dec. 2021-Now** **Professor, AHU, Jordan.**
- Sep. 2017-Dec. 2021** **Associate Professor, AHU, Jordan.**
- Sep. 2016-Sep.2017** **Chairperson, Electrical and Communication Engineering Dept., AHU.**
- Sep. 2013-Sep. 2017** **Assistant Professor, AHU, Jordan.**
- Jan. 2010-Dec.2012** **Teaching Assistant, Southern Methodist University, Dallas, USA.**
- May.2012-Sep.2012** **Internship at Research In Motion (RIM), USA.**
- Sep. 2007-Aug.2009** **Full-Time Lecturer, Yanbu College of Technology, Yanbu, Saudi Arabia**
- Mar.2007-Sep.2007** **Full-Time Lecturer, Al-Quds University College, Amman, Jordan.**
- Sep.2002-Aug.2004** **System and Maintenance Engineer, Communication Directorate-Public Security, Amman, Jordan**
- Sep. 2001-Jan. 2002** **Trainee Engineer, Orange Company for Mobile Services, Amman, Jordan.**
- Jun. 2001-Sep. 2001** **Trainee Engineer, Egyptian Company for Telephone Manufacturing, Cairo, Egypt.**

Activities and Committees at AHU

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|---------------------|---|
| Sep. 2021-Date | Member , Scientific Committee, Faculty of Engineering. |
| Sep. 2019-Aug. 2020 | Member , AHU University Council. |
| Sep. 2015-Aug. 2018 | Member , Faculty of Engineering Council. |
| 2018-Now | Member , Promotion Committee |
| Sep. 2015-Sep. 2016 | Member , Graduate Committee @ Computer Eng. Dept. |
| 2014-2017 | Member , selecting new Faculty Members |
| Sep. 2016-Sep.2017 | Member , AHU Courses Schedule |

Current H index and Citations

- My current **ResearchGate** score is 97.8 and profile at : https://www.researchgate.net/profile/Zouhair_Al-Qudah
- My Scopus profile: <https://www.scopus.com/authid/detail.uri?authorId=24823810200>
- My current research h-index is **6** and i10-index is **6** and my current total number of citations is **203**,
Google Scholar Account: <https://scholar.google.com/citations?user=435RhOYAAAAJ&hl=en>

Research Interests

| | |
|---------------------------------------|---------------------------------------|
| Network Information Theory | 4G/5G Wireless Communication networks |
| Error Control Coding | Cognitive Radio |
| Applied Mathematics and Optimizations | Signal Processing for Communications |

Master's Theses Supervised:

- Dima Turki, "Transmission Strategies over a Broadcast Channel Aided by a Relay", Yarmouk University, Irbid-Jordan, Dec. 2019.
- M. Alrwashdeh " Capacity of Cascade Relay Channel with orthogonal components ", Yarmouk University, Irbid-Jordan, Jan. 2015.
- L. Al-Hawari, " Capacity of Parallel Relay Channel with orthogonal components ", Yarmouk University, Irbid-Jordan, Jan. 2015.

Master's Theses Examined:

- More than 10 master theses were examined at different universities in Jordan.

Teaching Experience.

During my teaching career, I have taught the following courses at the undergraduate and graduate levels

Graduate Courses

- Introduction to Stochastic Process
- Modeling of Renewable Energy Systems
- Linear Optimizations.

Undergraduate Courses

- Graduation Project (More than 30 students have been successfully supervised.)
- Special Topics in Electrical Power Engineering (Renewable Energy Systems)
- Communication Networks.
- Satellite Communications.
- Mobile Communications.
- Communication Systems (Advanced).
- Digital Signal Processing
- Digital Communications and the Lab.
- Analog Communications and the Lab.
- Analog and Digital Communications.
- Probability and Random Process.
- Signals and Systems.
- Automatic Control Theory
- Measurements and Instrumentations
- Digital Logic
- Electronics I
- Electrical Circuits II
- Electrical Circuits I

In addition, I have the capability to teach the following courses

- Electrical Machines I
- Electromagnetics
- Engineering Mathematics I
- Engineering Mathematics II

Honors and Awards

- A scholarship to peruse Ph.D. degrees at SMU, USA, 2009-2013.
- A Scholarship to peruse Master degree from Kalmar University, Aug. 2005-Nov.2006, Sweden .
- Jordan-Army Scholarship with full tuition waiver for the undergraduate studies Sep. 1997-Aug. 2002.

Professional Reviewing Services:

- **Reviewer** for IEEE Journal on Selected Areas in Information Theory
- **Reviewer** for IEEE Wireless Communication Magazine
- **Reviewer** for IET Communications
- **Reviewer** for International Journal of Communication Systems
- **Reviewer** for Transactions on Emerging Telecommunications Technologies
- **Reviewer** for Advances in Electrical and Electronic Engineering
- **Reviewer** for IEEE Transactions on Communication Systems
- **Reviewer** for Physical Communications
- **Reviewer** for Electronic Letters

Publications:

Journal Articles

- J28* K. Darabkh , J. Zomot , **Z. Al-qudah**, A. Khalifeh, “Impairments-Aware Time Slot Allocation Model for Energy-constrained Multi-Hop Clustered IoT Nodes Considering TDMA and DSSS MAC Protocols”, **Journal of Industrial Information Integration, Elsevier**, Vol. 25, Jan. 2022.
- J27* **Z. Al-qudah**, Mohd H.S. Alrashdan, and Khalid A. Darabkh “On the Capacity Region of the Multiple Access Half-Duplex Relay Channel”, **Int'l J. of Communication Systems (IJCS)**, Vol.34, Iss.17, Nov.2021.
- J26* **Z. Al-qudah**, A. Ababneh, “Broadcast Diamond Channel: Transmission Strategies and Bounds”, **Journal of the Franklin Institue**, Vol.358, Iss.3, Feb. 2021.
- J25* **Z. Al-qudah**, M. Al Bataineh and A. Musa, “A Novel Multiple Access Diamond Channel Model”, **Int'l J. of Communication Systems (IJCS)**, Vol.33, Iss.17, Oct. 2020.
- J24* **Z. Al-qudah**, K. Darabkh “Achievable Rates of Gaussian Cognitive Interference Channel with Common Interference”, **IET Communications**, Vol.14, Iss.16, Oct. 2020.
- J23* **Z. Al-qudah**, A. Alqudah, K. Darabkh “Transmission over Gaussian MIMO half-duplex relay channel ”, **Physical Communication**, Vol.40, Jun. 2020.
- J22* K. Darabkh , J. Zomot , **Z. Al-qudah**, “EDB-CHS-BOF: Energy and Distance Based Cluster Head Selection with Balanced Objective Function Protocol”, **IET Communications**, Vol.13, Iss.19, Nov. 2019.

- J21 **Z. Al-qudah** and A. Musa," On the Capacity of the State-dependent Interference Relay Channel", **Int'l J of Communication Systems (IJCS)**, Vol.32, Iss.14, Sep. 2019.
(Q2)
- J20 W. Al-sawalmeh, **Z. Al-qudah**, and K. Darabkh, "Multiple Access Relay Channel: Achievable Rates over Orthogonal Channels", **Int'l J. of Electronics and Communications (AEU)**, Elsevier, Vol.109, Sep. 2019.
(Q2)
- J19 K. Darabkh, S. Odetallah, **Z. Al-qudah**, A. Khalifeh, and M.Shurman, "Energy-Aware and Density-Based Clustering and Relaying Protocol (EA-DB-CRP) for gathering data in wireless sensor networks", **Applied Soft Computing Journal**, Vol.80, Jul. 2019.
(Q1)
- J18 **Z. Al-qudah** and D. Rajan," An Achievable Region for the Cognitive Interference Relay Channel", **IEEE Transactions on Cognitive Communications and Networking**, Vol.4, Iss.4, Dec. 2018.
(Q1)
- J17 M. Al-Jaafreh and **Z. Al-qudah**, " Transmission Rates over State-Dependent Diamond Channel", **IET Communications**, Vol.12, Iss.4, Mar. 2018.
(Q2)
- J16 **Z. Al-qudah**, L. Al-Hawary, M. Alrwashdeh, and M.Al Bataineh," Parallel Relay Network with Orthogonal Components: Capacity and Power Allocation", **Wireless Personal Communications (Springer)**, Vol.96, Iss.3, Oct. 2017.
(Q2)
- J15 **Z. Al-qudah**, and M. Al Bataineh, "Allocation of Resources for the Gaussian Multiple Access Channel with Practical Partial Cooperation", **Int'l J. of Electronics and Communications (AEU)**, Elsevier, Vol.74, Apr. 2017.
(Q2)
- J14 M. Al Bataineh and **Z. Al-qudah**, "A Novel Gene Identification Algorithm with Bayesian Classification", **Biomedical Signal Processing and Control, Elsevier**, Vol.31, Jan. 2017.
(Q2)
- J13 **Z. Al-qudah**," Achievable Rates of a State-Dependent Relay Channel with Orthogonal Components", **IET Communications**, Vol.10, Iss.16, Nov. 2016.
(Q2)
- J12 M. Al Bataineh, **Z. Al-qudah**, and A. Alzaban "A Novel Iterative Sequential Monte Carlo Algorithm for Motif Discovery", **IET Signal Processing**, Vol.10, Iss.5, Jul. 2016.
(Q2)
- J11 **Z. Al-qudah**, M. Alrwashdeh, L. Al-Hawary, and M.Al Bataineh "On the Capacity of a Relay Network With Orthogonal Components", **Int'l J. of Electronics and Communications (AEU)**, Elsevier, Vol.70, May 2016.
(Q2)
- J10 **Z. Al-qudah** "Achievable rates of Gaussian two-way relay channel with orthogonal components and partial decoding at relay", **Electronic Letters**, Vol.52, Iss.3, Feb. 2016.
(Q2)
- J9 **Z. Al-qudah** "Orthogonal Space Time Block Coding over Dirty Paper Channel: outage Capacity Analysis", **Physical Communication, Elsevier**, Vol. 15, Jun.2015.
(Q2)
- J8 **Z. Al-qudah**, and M. Al Bataineh, " Cognitive Interference Channel: Achievable Rate Region and Power Allocation", **IET Communications**, Vol.9, Iss.2, Jan. 2015.
(Q2)
- J7 **Z. Al-qudah** and D. Rajan "Dirty paper coding for cognitive Z-channel: Performance Results", **IEEE Transaction on Wireless Communication**, Vol.12, Iss.12, Dec. 2013.
(Q1)

- J6 **Z. Al-qudah** “Gaussian MIMO Relay Channel with Orthogonal Channel Components”,
(Q3) **Journal of Electrical Engineering**, Vol.71, Iss.3, Jun. 2020.
- J5 W. Abu Shehab and **Z. Al-qudah**, “Singular Value Decomposition: Principles and
(Q4) Applications in Multiple Input Multiple Output Communication system”, **Int. J. of Computer
Networks & Communications**, Vol.9, No.1, Jan 2017.
- J4 **Z. Al-qudah** and W. Abu Shehab, “Two-Way Multiple Relays Channel: Achievable Rate
(Q3) Region and Optimal Resources “**Advances in Electrical and Electronic Engineering
(AEEE)**, Vol.14, Iss.3, Sep. 2016.
- J3 A. Ababneh and **Z. Al-qudah** “Distributed Anchor Activation Schemes for RSS
(Q3) Localization”, **International Journal of Sensor Networks** , Vol.39, Iss.3, Jul. 2022.
- J2 **Z. Al-qudah** “Achievable Rates of Gaussian Broadcast Channel with Interference”, **Journal
of Communications** (JCM), Vol. 9, Iss 4, Apr. 2014.
- J1 M. Al Bataineh and **Z. Al-qudah**," Bayesian Classification of Ribosome Binding Sites in
Prokaryotic Genome Sequences: A Communications Theory Approach", **International
Journal of Bioscience, Biochemistry and Bioinformatics** vol.7, No.3, 2017.

Conference Papers

- C3 K. Darabkh, S. Odetallah, **Z. Al-qudah**, and A. Khalifeh “A New Density-Based Relaying
Protocol for Wireless Sensor Networks”, 14th International Wireless Communications &
Mobile Computing Conference (**IWCMC-2018**), Cyprus.
- C2 Z. Al-qudah and D. Rajan “MIMO Dirty paper coding: System Design and Implementation”,
IEEE Int. Conf. on Computing, Networking and Communications (**ICNC 2012**), Hawaii,
USA.
- C1 Z. Al-qudah, “Multilevel Coded Modulation for Multipath Rayleigh fading channel”, IEEE
Int. Conf. on Computer and Communication Engineering, (**ICCCE-2008**), Kula Lumpur,
Malaysia