

# Hilal El Misilmani

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## CURRENT POSITION

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<b>Beirut Arab University (BAU)</b> Assistant Professor, Electrical & Computer Engineering Department Professional Experience:	Debbieh, Lebanon Sept. 2016 – Present
- ABET self-study report editor for the CEE program	Sept. 2017 – Present
- Graduate studies coordinator for the Faculty of Engineering	Sept. 2017 – Present
- Founder of the Radio Frequency & Antenna Design (RFAD) research team at BAU	Sept. 2018 – Present

## EDUCATION

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<b>American University of Beirut</b> Ph.D., Electrical and Computer Engineering Dissertation: <i>Development of Antennas and Sources for High Power Microwave Applications</i> Advisor: Prof. Karim Kabalan	Beirut, Lebanon Sept. 2012 – May. 2015
<b>American University of Beirut</b> M.E., Electrical and Computer Engineering Thesis: <i>Compact Circularly Polarized Multi-band Antenna for RFID Applications</i> Advisor: Prof. Karim Kabalan	Beirut, Lebanon Sept. 2010 – August. 2012
<b>Beirut Arab University</b> B.E., Communications and Electronics Engineering	Debbieh, Lebanon Sept. 2005 – June 2010

## EMPLOYMENT

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<b>Beirut Arab University</b> Assistant Professor, Electrical & Computer Engineering Department Lecturer, Electrical & Computer Engineering Department	Debbieh, Lebanon Sept. 2016 – Present Sept. 2015 – May 2016
<b>American University of Beirut</b> Research Associate, Electrical & Computer Engineering Department Lecturer, Electrical & Computer Engineering Department (Part Time) Lecturer, Electrical & Computer Engineering Department (Part Time) Research Assistant, Electrical & Computer Engineering Department (Part Time)	Beirut, Lebanon June 2015 – Aug. 2016 Sept. 2015 – Dec 2015 Sept. 2014 – Dec 2015 Sep. 2010 – May 2015
<b>Beirut Research and Innovation Center</b> Researcher, Humanitarian Demining Research Program	Beirut, Lebanon Sept. 2012 – Aug. 2014
<b>Dar Al-Handasah (Shair and Partners)</b> Telecommunications Engineer	Beirut, Lebanon Aug. 2011 – Aug. 2012

## GRANTS AND SCHOLARSHIPS

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Associated Research Unit Program, National Council for Scientific Research – Lebanon (CNRS-L)	2013 – 2015
National Council for Scientific Research – Lebanon (CNRS-L) Doctoral Scholarship	Sept. 2013 – May 2015
Lebanese Association for Scientific Research (LAsER) Scholarship	Sept. 2013 – May 2015
Rafic Hariri Foundation Scholarship	Sept. 2005 – June 2010
The Association of Specialization and Scientific Guidance (SSG) Scholarship	Feb. 2006 – June 2010

## PUBLICATIONS

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### Journal Papers

1. K. Youssef, M. Moussa, M. Al-Husseini, **H. M. El Misilmani**, and K. Y. Kabalan, "Characteristic Mode Solution of Complex-Coefficient Complex-Solution Differential Equations," Under Review
2. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design Procedure for Planar Slotted Waveguide Antenna Arrays with Controllable Sidelobe Level Ratio for High Power Microwave Applications," *Engineering Reports*. 2020;e12255. <https://doi.org/10.1002/eng2.12255>
3. **H. M. El Misilmani**, T. Naous, and S. K. Al Khatib, "A Review on the Design and Optimization of Antennas Using Machine Learning Algorithms and Techniques," *International Journal of RF and Microwave Computer-Aided Engineering*, doi:10.1002/mmce.22356
4. **H. M. El Misilmani**, T. Naous, S. K. A. Khatib and K. Y. Kabalan, "A Survey on Antenna Designs for Breast Cancer Detection Using Microwave Imaging," in *IEEE Access*, vol. 8, pp. 102570-102594, 2020, doi: 10.1109/ACCESS.2020.2999053
5. A. Damaj, **H. M. El Misilmani**, and S. Abou Chahine, "Miniaturized Dual Band Antennas with Frequency Tunability for Implanted Biomedical Devices", *International Journal of Engineering Research and Technology (IJERT)*, vol. 12, Issue 12, 2019
6. **H. M. El Misilmani**, M. Y. Abou-Shahine, Y. Nasser, and K. Y. Kabalan, "Recent Advances on Radio-Frequency Design in Cognitive Radio," *International Journal of Antennas and Propagation*, Vol. 2016, Article ID 9878475, 16 pages, 2016. doi:10.1155/2016/9878475.
7. **H. M. El Misilmani**, K. Y. Kabalan, M. Abou Shahine, and M. Al-Husseini, "A Method of Moment Approach in Solving Boundary Value Problems," *Journal of Electromagnetic Analysis and Applications*, Vol. 7, Issue 3, March 2015
8. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design of Slotted Waveguide Antennas with Low Sidelobes for High Power Microwave Applications," *Progress in Electromagnetics Research C*, Vol. 56, 15-28, 2015
9. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Improved Vlasov Antenna with Curved Cuts and Optimized Reflector Position and Shape," *International Journal of Antennas and Propagations*, Vol. 2015, Article ID 193630, 12 pages, 2015
10. **H. M. El Misilmani**, M. Abou Shahine, M. Al-Husseini, and K. Y. Kabalan, "A Simplified Method of Moment (MoM) Approach to solving nth Order Linear Differential Equations," *Int. Journal of Scientific & Engineering Research*, Vol. 5, Issue 6, June 2014
11. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Compact Circularly Polarized Multi-Band Antennas for RFID Applications," *International Journal of Antennas and Propagations*, April 2014

### Conference Papers

1. **H. M. El Misilmani** and M. Al-Husseini, "1D Slotted Waveguide Antenna with Controlled Beamwidth and Sidelobe Level Ratio," 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Atlanta, GA, USA, 2019, pp. 1421-1422, doi: 10.1109/APUSNCURSINRSM.2019.8888549.
2. **H. M. El Misilmani** and T. Naous, "Machine Learning in Antenna Design: An Overview on Machine Learning Concept and Algorithms," 2019 International Conference on High Performance Computing & Simulation (HPCS), Dublin, Ireland, 2019, pp. 600-607, doi: 10.1109/HPCS48598.2019.9188224.
3. A. Damaj, **H. M. El Misilmani** and S. A. Chahine, "Miniaturized Implantable Coplanar Waveguide Antenna for Biomedical Applications," 2019 International Conference on High Performance Computing & Simulation (HPCS), Dublin, Ireland, 2019, pp. 608-611, doi: 10.1109/HPCS48598.2019.9188130.

4. **H. El Misilmani**, M. Al-Husseini and K. Kabalan, "Design Procedure of Two-Dimensional Circularly Polarized Slotted Waveguide Antenna Arrays," 2018 International Conference on High Performance Computing & Simulation (HPCS), Orleans, 2018, pp. 83-86, doi: 10.1109/HPCS.2018.00028.
5. A. W. Damaj, **H. M. El Misilmani** and S. A. Chahine, "Implantable Antennas for Biomedical Applications: An Overview on Alternative Antenna Design Methods and Challenges," 2018 International Conference on High Performance Computing & Simulation (HPCS), Orleans, 2018, pp. 31-37, doi: 10.1109/HPCS.2018.00019.
6. **H. M. El Misilmani** and A. M. El-Hajj, "Massive MIMO Design for 5G Networks: An Overview on Alternative Antenna Configurations and Channel Model Challenges," 2017 International Conference on High Performance Computing & Simulation (HPCS), Genoa, 2017, pp. 288-294, doi: 10.1109/HPCS.2017.52.
7. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Simple Design Procedure for 2D SWAs with Specified Sidelobe Levels and Inclined Coupling Slots," in the 4th Advanced Electromagnetic Symposium (AES 2016), Spain, July 2016
8. M. Al-Husseini, **H. M. El Misilmani**, K. Y. Kabalan, A. El-Hajj, and E. Nassar, "Simple Design Method for Dielectric-Filled Low-Sidelobe Slotted Waveguide Antennas," in the 4th Advanced Electromagnetic Symposium (AES 2016), Spain, July 2016
9. **H. M. El Misilmani**, K. Y. Kabalan, A. El-Hajj and M. Al-Husseini, "Design procedure for 2D slotted waveguide antenna with controllable sidelobe level," 2015 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, Vancouver, BC, 2015, pp. 216-217, doi: 10.1109/APS.2015.7304494
10. M. Al-Husseini, **H. M. El Misilmani**, K. Y. Kabalan, A. El-Hajj, X. Pan and C. G. Christodoulou, "Controllable-sidelobe slotted waveguide antennas with corrugations for frequency selectivity," 2015 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, Vancouver, BC, 2015, pp. 214-215, doi: 10.1109/APS.2015.7304493
11. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design Procedure for 2D Slotted Waveguide Antenna with Inclined Coupling Slots for Sidelobe Level Control," in the Progress in Electromagnetics Research Symposium (PIERS), Prague, July 2015
12. **H. M. El Misilmani**, K. Y. Kabalan M. Abou Shahine, and M. Al-Husseini, "A Method of Moment Approach in Solving Boundary Value Problems," in the First Irbid International Engineering Conference (IIEC), Jordan, October 2014
13. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Design Procedures for Slotted Waveguide Antennas with Specified Sidelobe Levels," in the High Performance Computing & Simulation Conference (HPCS), Italy, July 2014
14. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Antennas for High Power Microwave Applications," in the Lebanese Association for the Advancement of Science (LAAS), Lebanon, March 2014
15. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Optimized Reflector Position for Vlasov Antennas," in the Progress in Electromagnetics Research Symposium (PIERS), Stockholm, Sweden, August 2013
16. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Vlasov Antenna with Curved Cuts for High Power Microwaves," in the High Performance Computing & Simulation Conference (HPCS), Helsinki, Finland, July 2013
17. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Simple Miniaturized Triple-band Antenna for WLAN/WiMAX Applications," in Progress In Electromagnetics Research Symposium (PIERS), Moscow, Russia, August 2012

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 TEACHING EXPERIENCE
 

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**Beirut Arab University (BAU)**

Assistant Professor, Electrical &amp; Computer Engineering Department

Lecturer, Electrical &amp; Computer Engineering Department

Taught and developed the following courses:

Electromagnetic Fields and Waves, and Radio Frequency Circuits:

- Electric Circuits (200-level) (2016 – 2019)
- Propagation and Antennas II (400-level) (2018 – 2020) (Redesigned)
- Advanced Antenna Design (500-level) (2021) (Introduced as a new Technical Elective course)
- Antenna Engineering (600-level) (2019)
- Wave Propagation Transmission and Advanced Antenna Engineering (600-level) (2020)

Signal Processing and Communications:

- Analog Signal Processing (200-level) (2015, 2016)
- Signals and Systems (300-level) (2016 – 2020) (Redesigned)
- Digital Signal Processing (300-level) (2015 – 2020) (Redesigned)
- Acoustics (400-level) (2016 – 2020) (Redesigned)
- Information Theory and Coding (500-level) (2016 – 2019) (Redesigned)

General Courses:

- Linear Algebra (200-level) (2019 – 2020)

To access the **teaching evaluation reports** of most of these courses please click *here*.**American University of Beirut**

Lecturer, Electrical &amp; Computer Engineering Department

Taught the following courses:

- Analog Signal Processing (200-level) (2015, 2016)
- Communications Laboratory (400-level) (2010 – 2012, 2015)

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 RESEARCH EXPERIENCE
 

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**Beirut Arab University**

Assistant Professor – Electrical &amp; Computer Engineering Department

- Founded the Radio Frequency & Antenna Design (RFAD) research team

- Supervised/advised: 1 doctoral dissertation, 3 master theses, 9 undergraduate final year projects, and 2 independent study internships

- Currently: member of 2 doctoral dissertation committees, and supervisor of one master thesis, two undergraduate final year projects, and 2 independent study internships

**Beirut Research and Innovation Center**

Researcher – Humanitarian Demining Research Program

- Conducted research on the implementation of a complete system for the remote neutralization of mines/UXOs using high power microwave pulses.

- Wrote and published several journal papers, conference papers, and technical reports

- Assisted in writing proposals to secure funding for research

**American University of Beirut**

Research Associate – Electrical &amp; Computer Engineering Department

- Worked on the design and fabrication of two-dimensional slotted waveguide antenna arrays

- Developed a simple procedure to solve complex-coefficient complex-solution differential equations

- Further enhanced the design of SWA arrays targeting lower side lobe levels and frequency tunability

- Published one journal and two conference papers

Research Assistant – Electrical &amp; Computer Engineering Department

- Investigated, designed, and optimized several antenna types

- Published 6 journal papers and 9 conference papers

- Participated in several international and local conferences and workshops

Debbieh, Lebanon

Sept. 2016 – Present

Sept. 2015 – May 2016

Beirut, Lebanon

Fall 2015, Fall 2016

Debbieh, Lebanon

Sept. 2015 – Present

Beirut, Lebanon

Sept. 2012 – Aug. 2014

Beirut, Lebanon

June 2015 – Aug. 2016

Sept. 2010 – May 2015

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**PROFESSIONAL RESEARCH EXPERIENCE**


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**Conference Organization**

- TPC member of MIC-Electromag 2020 conference Spain, 2020
- Organizer the ACME 2019 special session, part of the HPCS 2019 conference Ireland, 2019
- Organizer the ACME 2018 special session, part of the HPCS 2018 conference France, 2018
- Member of the IPC of ACME 2017 special session, part of HPCS 2017 conference Italy, 2017
- Organizer the 3rd Middle East Conference on Antennas & Propagation (MECAP 2016) Lebanon, 2016
- Secretary of the IEEE AP/MTT/MAG Lebanon Chapter Jan. 2015 – Jan. 2016
- Member of the IEEE Antennas and Propagation Society Since 2013
- Member of the Lebanese Order of Engineers Since 2011
- Member of the Institute of Electrical and Electronic Engineers (IEEE) Since 2006

**Paper Reviewing**

- IEEE Access
- IEEE Sensors Letters
- IET Communications
- Microwave and Optical Technology Letters
- International Journal of Antennas and Propagation
- Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine
- International Journal of Engineering
- Iranian Journal of Electrical and Computer Engineering
- Mosharaka International Conference on Electromag., Micro., Antennas & Propagation (MIC-Electromag 2020)
- The 2019 International Conference on High Performance Computing & Simulation (HPCS 2019)
- The 2018 International Conference on High Performance Computing & Simulation (HPCS 2018)
- The 2017 International Conference on High Performance Computing & Simulation (HPCS 2017)
- The 3rd Middle East Conference on Antennas & Propagation (MECAP)
- The 13th Mediterranean Microwave Symposium (MMS 2013)
- The 20th International Conference on Telecommunications (ICT 2013)
- The 9th International Wireless Communications and Mobile Computing Conference (IWCMC 2013)

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**RESEARCH WORK IN PROGRESS**


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1. Full analytic design procedure of reconfigurable filled-slotted waveguide antennas (in collaboration with BRIC)
2. Design of filled slotted waveguide antennas using machine learning
3. Design of massive MIMO antennas with beamforming using ML for 5G (in collaboration with KFUPM)
4. Design of antennas for breast cancer detection using microwave imaging (in collaboration with AUB)
5. Development of a deep learning pipeline for the detection and localization of breast cancer tumors
6. Design of reconfigurable slotted waveguide antennas using corrugations

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**PRESENTATIONS**


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1. **H. M. El Misilmani** and M. Al-Husseini, "1D Slotted Waveguide Antenna with Controlled Beamwidth and Sidelobe Level Ratio," oral presentation delivered at the 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Atlanta, Georgia, U.S.A., 7 – 12 July, 2019
2. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design Procedure of Two Dimensional Circularly Polarized Slotted Waveguide Antenna Arrays," oral presentation delivered at the 2018 International Conference on High Performance Computing & Simulation (HPCS 2018), Orléans, France, July 16 – 20, 2018
3. A. Damaj, **H. M. El Misilmani**, and S. Abou Chahine, "Implantable Antennas for Biomedical Applications: An Overview on Alternative Antenna Design Methods and Challenges," oral presentation delivered at the 2018 International Conference on High Performance Computing & Simulation (HPCS 2018), Orléans, France, July 16 – 20, 2018

4. **H. M. El Misilmani** and A. M. El-Hajj, "Massive MIMO Design for 5G Networks: An Overview on Alternative Antenna Configurations and Channel Model Challenges," oral presentation delivered at the 2017 International Conference on High Performance Computing & Simulation (HPCS 2017), Genoa, Italy, July 17 – July 21, 2017
5. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Simple Design Procedure for 2D SWAs with Specified Sidelobe Levels and Inclined Coupling Slots," oral presentation delivered at the 4th Advanced Electromagnetic Symposium (AES 2016), Spain, July 2016
6. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design Procedure for 2D Slotted Waveguide Antenna with Controllable Sidelobe Level," oral presentation delivered at the 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Canada, July 2015
7. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design Procedure for 2D Slotted Waveguide Antenna with Inclined Coupling Slots for Sidelobe Level Control," poster presentation delivered at the Progress in Electromagnetics Research Symposium (PIERS), Prague, July 2015
8. **H. M. El Misilmani**, K. Y. Kabalan M. Abou Shahine, and M. Al-Husseini, "A Method of Moment Approach in Solving Boundary Value Problems," oral presentation delivered at the First Irbid International Engineering Conference (IIEC), Jordan, October 2014
9. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Design Procedures for Slotted Waveguide Antennas with Specified Sidelobe Levels," oral presentation delivered at the High Performance Computing & Simulation Conference (HPCS), Italy, July 2014
10. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Antennas for High Power Microwave Applications," oral presentation delivered at the Lebanese Association for the Advancement of Science (LAAS), Lebanon, March 2014
11. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Optimized Reflector Position for Vlasov Antennas," oral presentation delivered at the Progress in Electromagnetics Research Symposium (PIERS), Stockholm, Sweden, August 2013
12. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Vlasov Antenna with Curved Cuts for High Power Microwaves," oral presentation delivered at the High Performance Computing & Simulation Conference (HPCS), Helsinki, Finland, July 2013
13. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Simple Miniaturized Triple-band Antenna for WLAN/WiMAX Applications," poster presentation delivered at Progress In Electromagnetics Research Symposium (PIERS), Moscow, Russia, August 2012

#### UNIVERSITY COMMITTEES AND ACADEMIC SERVICE

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- ABET self-study report editor for the Communications and Electronics Engineering Program 2017 – Present
- Graduate studies coordinator for the Faculty of Engineering: 2017 – Present
  - Developed and published the first faculty of engineering graduate catalogue 2019
  - Reviewed and edited the postgraduate bylaws
  - Presented the Faculty of Engineering in the Graduate Studies Open House (*video link*) 2018, 2019, 2021
  - Coordinated with the Dean of Postgraduate Studies
- Participated in the HECD WorkReadyNow Virtual Training of Trainers workshop delivered by EDC Dec. 2020
- Participated in the CubeSat Technology: Toward Developing the First Lebanese NanoSatellite 2019 workshop at CNRS-L
- Built connections with the industry to find jobs and internship vacancies Since 2018
- Member of the faculty of engineering council 2016 – 2017, 2018 – 2019
- Member of the financial aid committee 2016 – 2019
- Organized a seminar on the Digital transformation in Telco operators: Challenges & Opportunities Mar. 2019
- Member of the course scheduling committee 2016 – 2017
- Member of the job fair committee 2016 – 2017

- Member of the judging committee of BAU Engineering Projects Day 2016 – 2017
- Participated in Urban Health & Wellbeing: Advancing Systems, Science & Technology Workshop Apr. 2017
- Presented the Faculty of Engineering in ERASMUS+ workshop Oct. 2017
- Attended a training workshop entitled "Teaching & Learning: Curriculum Design, Assessment and Feedback", organized by BAU, in collaboration with the University of Roehampton Jan. 2017
- Prepared and organized the BAU Open Doors 2016 – 2017
- Assisted in organizing a workshop on how the students can build their CVs and ace their interviews, organized by the Alumni and Career Office in partnership with BLOM Shabeb 2017

#### ADDITIONAL CERTIFICATIONS

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GSM Network Training Certificate, Ogero Telecom	Lebanon, 2010
Common Channel Signaling (SS#7) Network Training Certificate, Ogero Telecom	Lebanon, 2009
Digital Microwave and GSM Network Training Certificate, Ogero Telecom	Lebanon, 2009
Cisco Certified Network Associate (CCNA) Certificate, Cisco Networking Academy	Lebanon, 2009
Digital Satellite Communication Training Certificate, Beirut Media Center	Lebanon, 2008

#### SKILLS

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Presentation and Reports: LaTeX - Beamer

Online teaching: Microsoft Teams, Zoom

Simulation tools: Ansoft HFSS, CST MWS, ADS, OrCAD PSpice, Multisim, LabVIEW, Matlab & Simulink

RF planning software: TEMS Cell Planner Tool, Atoll simulation tool

Languages: Fluent in English, native Arabic speaker (fluent), with basic knowledge of French

#### REFERENCES

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**Karim Kabalan, Ph.D.**

Professor

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**Ziad Osman, Ph.D.**

Professor, Chairman

Electrical and Computer Engineering Department

**Beirut Arab University**

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**Mohammed Al-Husseini, Ph.D.**

Senior Researcher

**Beirut Research and Innovation Center**

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**Christos Christodoulou, Ph.D.**

Dean of Engineering and Computing

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