

Annual Research & Community Service Report (2021)

Introduction:

Electrical Engineering Department is committed to conduct profound research that contributes to the advancement of engineering knowledge and engineering practices. The department encourages its faculty members to produce intellectual contributions of high quality. The department schedule the workload in such a way that each faculty member could have more time to be used for scholarly activities. The department recognizes the intellectual contributions by its faculty members that create new knowledge, strengthen its scholarly environment, or find practical solutions to industry and community-related problems. In addition, the department encourages research collaboration and dissemination of research interest among its faculty members. Financial and technical support, internally and externally, are made available and easily accessible to the department faculty.

The electrical engineering program chair has established a Scientific Research and Community Service Committee to plan, execute and manage the research activities in the department. The committee members are listed in Table 1.

Table 1. Scientific Research and Community Service Committee

Committee Members	Role
Dr. Muhammad Irfan	Committee Head
Dr. Ahmad Alzahrani	Member
Dr. Belqasem Aljafari	Member
Dr. Hasan Algadi	Member
Engr. Mesfer AlNajrani	Member
Engr. Saleh Aldawseri	Member

The Program Research Mission:

To develop a research culture in the department and to contribute to the society in establishing knowledge-based economy.

The Program Research Objectives:

- Contribution to building a knowledge-based society, and assistance to the priorities of industry and economic growth in the Kingdom.
- Develop and support a more active research culture at the department.
- Discover and innovate through high quality competitive research in electrical engineering.
- Establish national and international partnerships and develop collaborative projects within NU and with external academic and industrial partners.
- Contributing to the community service through organizing technical seminars and workshops.

Research Directions:

The department has identified eight areas for the fundamental and applied research. These research areas are identified keeping in view the Vision 2030 of the Kingdom.

- Renewable Energy
- Stability of Power Systems
- Modernization of Power Grid
- Communications and Internet of things
- NANO technology and MEMS
- Cognitive Radio and Emerging Technologies
- Image Processing and Multimedia Communications
- Artificial Intelligence and Machine Learning

Research Facilities:

The department has the state of the art laboratories to conduct the research. The list of the laboratories are given below:

- Renewable Energy Lab
- National Instruments Hardware and Software Set-Up
- Power Machines Lab
- Control Lab
- Circuits Lab
- Communication Lab

Mapping of EE Research KPIs with NU KPIs

The EE KPIs related research have been mapped with the KPIs of the Najran University KSA. The mapping table has been given below.

Research KPIs of the University	S10.2 Number of citations in refereed journals in the previous year per full time equivalent faculty members	S10.3 Proportion of full time member of teaching staff with at least one refereed publication during the previous year
Research KPIs of EE		
KPI-P-16 Citations rate in refereed journals per faculty member	√	
KPI-P-15 Rate of published research per faculty member		√
KPI-P-14 Percentage of publications of faculty members		√

Research Publications in Academic Year 2021:

The EE faculty members have published **107 papers** in various peer reviewed, Web of Science journals. The total faculty members in the department are 19 out of which 16 faculty members have Ph.D degrees. The target of publishing a minimum 15 journal papers per year has been achieved. The journal publications list has been given in Table 2 and the analysis have been given in Table 3.

*Notably, total papers published by Najran University in web of science in year 2021 are 526. Thus, the contribution of the EE department is $107/526 * 100 = 20.3\%$.*

Table 2. Journal Publication

No.	Article Title	Authors	Journal Title	Date	Impact factor ISI/ SCOPUS
1	A Novel Technique to Detect False Data Injection Attacks on Phasor Measurement Units	Saleh Almasabi, Turki Alsuwian, Ehtasham Javed, Muhammad Irfan, Mohammad Jalalah, Belqasem Aljafari, Farid A. Harraz	Sensors	Vol. 21, Issue 15, August 2021	ISI, Impact Factor: 3.576, Q1
2	Combustion synthesis of β -SnWO ₄ -rGO: Anode material for Li-ion battery and photocatalytic dye degradation	Alharthi, Fahad A; Alsaiani, Mabkhoot A; Jalalah, Mohammed S; Shashank, Manjunatha; Alghamdi, Abdulaziz A; Algethami, Jari S; Ganganagappa, Nagaraju;	Ceramics International	2021	4.527
3	Cascade strand displacement reaction-assisted aptamer-based highly sensitive detection of ochratoxin A	Han, Bing; Fang, Cheng; Sha, Lingjun; Jalalah, Mohammed; Al-Assiri, MS; Harraz, Farid A; Cao, Ya;	Food Chemistry	2021	7.514
4	Sensor array for rapid pathogens identification fabricated with peptide-conjugated 2D metal-organic framework nanosheets	Sun, Zhaowei; Wu, Shuai; Peng, Ying; Wang, Minghui; Jalalah, Mohammed; Al-Assiri, MS; Harraz, Farid A; Yang, Jie; Li, Genxi;	Chemical Engineering Journal	2021	13.273
5	Fabrication of an artificial ionic gate inspired by mercury-resistant bacteria for simple and sensitive detection of mercury ion	Shi, Liu; Jia, Fengjie; Wang, Lin; Jalalah, Mohammed; Al-Assiri, MS; Gao, Tao; Harraz, Farid A; Li, Genxi;	Sensors and Actuators B: Chemical	2021	7.460
6	A novel Ag/PANI/ZnTiO ₃ ternary nanocomposite as a highly efficient visible-light-driven photocatalyst	Faisal, M; Jalalah, Mohammed; Harraz, Farid A; El-Toni, Ahmed Mohamed; Labis, Joselito P; Al-Assiri, MS;	Separation and Purification Technology	2021	7.312
7	Performance of functionalized 1T-MoS ₂ as composite counter electrode material for QDSSCs and its analogy with 2H-MoS ₂	Kulkarni, Bhakti; Alsaiani, Mabkhoot; Jyothi, MS; Kusuma, J; Jalalah, Mohammed; Harraz, Farid A; Balakrishna, R Geetha;	Materials Research Bulletin	2021	4.641

Department of Electrical Engineering

قسم الهندسة الكهربائية

8	Proximity-constructed bifunctional DNA probes for identification of stem-like biomarker in breast cancer	Wang, Ying; Dong, Langjian; Zhao, Jing; Jalalah, Mohammed; Al-Assiri, MS; Harraz, Farid A; Cao, Ya;	Sensors and Actuators B: Chemical	2021	7.460
9	Colloidal synthesis of NiMn ₂ O ₄ nanodisks decorated reduced graphene oxide for electrochemical applications	Umar, Ahmad; Akhtar, M Shaheer; Ameen, Sadia; Imran, M; Kumar, Rajesh; Wang, Yao; Ibrahim, Ahmed A; Albargi, H; Jalalah, Mohammed; Alsaiani, Mabkhoot A;	Microchemical Journal	2021	4.821
10	Hydrothermal synthesis of α -SnWO ₄ : Application to lithium-ion battery and photocatalytic activity	Alharthi, Fahad A; Shashank, M; Shashikanth, J; Viswantha, R; Alghamdi, Abdulaziz Ali; Algethami, JariS; Alsaiani, Mabkhoot A; Jalalah, Mohammed S; Ganganagappa, Nagaraju;	Ceramics International	2021	4.527
11	Co-fermentation of immobilized yeasts boosted bioethanol production from pretreated cotton stalk lignocellulosic biomass: Long-term investigation	Malik, Kamran; Salama, El-Sayed; El-Dalatony, Marwa M; Jalalah, Mohammed; Harraz, Farid A; Al-Assiri, MS; Zheng, Yuanzhang; Sharma, Priyanka; Li, Xiangkai;	Industrial Crops and Products	2021	5.645
12	Rapid Microwave Synthesis of β -SnWO ₄ Nanoparticles: An Efficient Anode Material for Lithium Ion Batteries	Sumedha, HN; Alsaiani, Mabkhoot A; Jalalah, Mohammed S; Shashank, M; Alharthi, Fahad A; Ahmad, Naushad; Algethami, Jari S; Vishwanth, Vishwanth; Ganganagappa, Nagaraju;	Crystals	2021	2.589
13	Immersion-plated palladium nanoparticles onto mesoporous silicon layer as novel SERS substrate for sensitive detection of imidacloprid pesticide	Al-Syadi, AM; Faisal, M; Harraz, Farid A; Jalalah, Mohammed; Alsaiani, Mabkhoot;	Scientific Reports	2021	4.380
14	Ammonium iodide salt-doped polyvinyl alcohol polymeric electrolyte for UV-shielding filters: synthesis, optical and dielectric characteristics	Mohammed, MI; Bouzidi, A; Zahran, HY; Jalalah, Mohammed; Harraz, Farid A; Yahia, IS;	Journal of Materials Science: Materials in Electronics	2021	2.478
15	A Highly Efficient Nonenzymatic Hydrogen Peroxide Electrochemical Sensor Using Mesoporous	Rashed, Md A; Faisal, M; Harraz, Farid A; Jalalah, Mohammed; Alsaiani, Mabkhoot; Alsareii, SA;	Journal of The Electrochemical Society	2021	4.316

	Carbon Doped ZnO Nanocomposite				
16	Biomethanation and microbial community response during agricultural biomass and shrimp chaff digestion	Ali, Gohar; Ling, Zhenmin; Saif, Irfan; Usman, Muhammad; Jalalah, Mohammed; Harraz, Farid A; Al-Assiri, MS; Salama, El-Sayed; Li, Xiangkai;	Environmental Pollution	2021	8.071
17	Novel SWCNTs-mesoporous silicon nanocomposite as efficient non-enzymatic glucose biosensor	Ahmed, Jahir; Rashed, Md A; Faisal, M; Harraz, Farid A; Jalalah, Mohammed; Alsareii, SA;	Applied Surface Science	2021	6.707
18	An efficient amperometric catechol sensor based on novel polypyrrole-carbon black doped α -Fe ₂ O ₃ nanocomposite	Ahmed, Jahir; Faisal, M; Jalalah, Mohammed; Alsaari, Mabkhoot; Alsareii, SA; Harraz, Farid A;	Colloids and Surfaces A: Physicochemical and Engineering Aspects	2021	4.539
19	Facilitated lignocellulosic biomass digestibility in anaerobic digestion for biomethane production: microbial communities' structure and interactions	Faisal, Shah; Thakur, Nandini; Jalalah, Mohammed; Harraz, Farid A; Al-Assiri, Mohammad Sultan; Saif, Irfan; Ali, Gohar; Zheng, Yuanzhang; Salama, El-Sayed;	Journal of Chemical Technology & Biotechnology	2021	3.174
20	Electrochemical Trans-Channel Assay for Efficient Evaluation of Tumor Cell Invasiveness	Shi, Liu; Wang, Lin; Ma, Xuemei; Jalalah, Mohammed; Alsareii, Saeed A; Gao, Tao; Harraz, Farid A; Li, Genxi;	ACS Applied Materials & Interfaces	2021	9.229
21	Synthesis, optical properties, and impedance spectroscopy of Na ₂ TeO ₃ doped polyvinyl alcohol as novel polymeric electrolyte films	Mohammed, MI; Jilani, W; Bouzidi, A; Zahran, HY; Jalalah, Mohammed; Harraz, Farid A; Yahia, IS;	Optical and Quantum Electronics	2021	2.084
22	World eutrophic pollution of lake and river: Biotreatment potential and future perspectives	Kakade, Apurva; Salama, El-Sayed; Han, Huawen; Zheng, Yuanzhang; Kulshrestha, Saurabh; Jalalah, Mohammed; Harraz, Farid A; Alsareii, Saeed A; Li, Xiangkai;	Environmental Technology & Innovation	2021	5.263
23	Sensitive detection of aqueous methanol by electrochemical route using mesoporous α -Fe ₂ O ₃ doped CdSe nanostructures modified glassy carbon electrode	Abdullah, MM; Faisal, M; Ahmed, Jahir; Harraz, Farid A; Jalalah, Mohammed; Alsareii, SA;	Journal of The Electrochemical Society	2021	4.316
24	Synergistic ammonia and fatty acids inhibition of microbial	Guo, Zhaodi; Usman, Muhammad; Alsareii, Saeed A;	Bioresource Technology	2021	9.642

Department of Electrical Engineering

قسم الهندسة الكهربائية

	communities during slaughterhouse waste digestion for biogas production	Harraz, Farid A; Al-Assiri, MS; Jalalah, Mohammed; Li, Xiangkai; Salama, El-Sayed;			
25	Porous silicon-mesoporous carbon nanocomposite based electrochemical sensor for sensitive and selective detection of ascorbic acid in real samples	Ahmed, Jahir; Faisal, M; Harraz, Farid A; Jalalah, Mohammed; Alsareii, SA;	Journal of the Taiwan Institute of Chemical Engineers	2021	5.876
26	Electrochemical Deposition of Cu Metal–Organic Framework Films for the Dual Analysis of Pathogens	Sun, Zhaowei; Peng, Ying; Wang, Minghui; Lin, Yuxin; Jalalah, Mohammed; Alsareii, Saeed A; Harraz, Farid A; Yang, Jie; Li, Genxi;	Analytical Chemistry	2021	6.986
27	Co-assembly of Peptides and Carbon Nanodots: Sensitive Analysis of Transglutaminase 2	Han, Yiwei; Zhang, Yichen; Wu, Shuai; Jalalah, Mohammed; Alsareii, Saeed A; Yin, Yongmei; Harraz, Farid A; Li, Genxi;	ACS Applied Materials & Interfaces	2021	9.229
28	Au nanoparticles decorated polypyrrole-carbon black/g-C ₃ N ₄ nanocomposite as ultrafast and efficient visible light photocatalyst	Faisal, M; Rashed, Md A; Ahmed, Jahir; Alsaiani, Mabkhoot; Jalalah, Mohammed; Alsareii, SA; Harraz, Farid A;	Chemosphere	2022	7.086
29	Novel polypyrrole-carbon black doped ZnO nanocomposite for efficient amperometric detection of hydroquinone	Ahmed, Jahir; Faisal, M; Jalalah, Mohammed; Alsareii, SA; Harraz, Farid A;	Journal of Electroanalytical Chemistry	2021	4.464
30	Development of an amperometric biosensor for dopamine using novel mesoporous silicon nanoparticles fabricated via a facile stain etching approach	Ahmed, Jahir; Faisal, M; Harraz, Farid A; Jalalah, Mohammed; Alsareii, SA;	Physica E: Low-dimensional Systems and Nanostructures	2022	3.382
31	Biocatalytic CsPbX ₃ Perovskite Nanocrystals: A Self-Reporting Nanoprobe for Metabolism Analysis	Li, Menglu; Zeng, Yujing; Qu, Xinyu; Jalalah, Mohammed; Alsareii, Saeed A; Li, Chao; Harraz, Farid A; Li, Genxi;	Small	2021	13.281
32	Review on perovskite silicon tandem solar cells: Status and prospects 2T, 3T and 4T for real world conditions	Akhil, S; Akash, S; Pasha, Altaf; Kulkarni, Bhakti; Jalalah, Mohammed; Alsaiani, Mabkhoot; Harraz, Farid A; Balakrishna, R Geetha;	Materials & Design	2021	7.991

33	Rapid photodegradation of linezolid antibiotic and methylene blue dye over Pt nanoparticles/polypyrrole-carbon black/ZnO novel visible light photocatalyst	Faisal, M; Rashed, Md A; Ahmed, Jahir; Alsaiari, Mabkhoot; Alkorbi, Ali S; Jalalah, Mohammed; Alsareii, SA; Harraz, Farid A;	Journal of Environmental Chemical Engineering	2021	5.909
34	Synthesis, Characterization and Photodegradation Studies of Copper Oxide-Graphene Nanocomposites	Raya, Indah; Ahmad, Awais; Alkaim, Ayad F; Bokov, Dmitry; Alwaily, Enas R; Luque, Rafael; Alsaiari, Mabkhoot; Jalalah, Mohammed;	Coatings	2021	2.881
35	Novel porous heteroatom-doped biomass activated carbon nanoflakes for efficient solid-state symmetric supercapacitor devices	Jalalah, Mohammed; Rudra, Siddheswar; Aljafari, Belqasem; Irfan, Muhammad; Almasabi, Saleh S; Alsuwian, Turki; Patil, Akshay A; Nayak, Arpan Kumar; Harraz, Farid A;	Journal of the Taiwan Institute of Chemical Engineers	2021	5.876
36	Testing of optical, dielectric and photocatalytic properties of Ce ³⁺ doped cobalt-cadmium nanocomposite for high frequency devices and wastewater treatment	M.Irfan,Ayyaz,M.Y.Naz, S.Shukrullah, M.M.Munir,K.Kamran, S.Rahman,M.Jalalah, M.K.A.Khan,M.Alsaiari, U.M.Niazi,	Ceramics International, December 2021. (ISI, Impact Factor: 4.527, Q1)	December 2021	ISI, Q1
37	Synthesis and Characterization of Manganese-Modified Black TiO ₂ Nanoparticles and Their Performance Evaluation for the Photodegradation of Phenolic Compounds from Wastewater	Muhammad Irfan, Rab Nawaz , Javed Akbar Khan, Habib Ullah, Tahir Haneef , Stanislaw Legutko, Saifur Rahman, Jerzy Józwick, Mabkhoot A. Alsaiari, Mohammad Kamal Asif Khan, Salim Nasar Faraj Mursal, Fahad Salem AlKahtani, Omar Alshorman and Abdunour Ali Jazem Ghanim,	Materials, Vol. 14, Issue 24, December 2021. (ISI, Impact Factor: 3.623, Q1)	December 2021	ISI, Q1
38	Statistical Study of Nonthermal Plasma-Assisted ZnO Coating of Cotton Fabric through Ultrasonic-Assisted Green Synthesis for Improved Self-Cleaning and Antimicrobial Properties	Muhammad Irfan, Muhammad Y. Naz, Muhammad Saleem, Malik Tanawush, Adam Glowacz, Witold Glowacz, Saifur Rahman, Mater H. Mahnashi, Yahya S. Alqahtani, Bandar A. Alyami, Ali O. Alqarni and Mabkhoot A. Alsaiari	Materials, Vol. 14, Issue 22, November 2021. (ISI, Impact Factor: 3.623, Q1)	November 2021	ISI, Q1
39	Severity Grading and Early Retinopathy Lesion Detection through Hybrid Inception-ResNet Architecture,”	Sana Yasin, Nasrullah Iqbal, Tariq Ali, Umar Draz, Ali Alqahtani, Muhammad Irfan,	Sensors, Vol. 21, Issue 20, October 2021. (ISI, Impact Factor: 3.576, Q1)	October 2021	ISI, Q1

		Abdul Rehman, Adam Glowacz, Samar Alqhtani, Klaudia Proniewska, Frantisek Brumercik, Lukasz Wzorek			
40	Synthesis and Characterization of Carbon and Carbon-Nitrogen Doped Black TiO ₂ Nanomaterials and their Application in Sonophotocatalytic Remediation of Treated Agro- industrial Wastewater	Saifur Rahman, Rab Nawaz, Javed Akber Khan, Habib Ullah, Muhammad Irfan, Adam Glowacz, Katarzyna Lyp- Wrońska, Lukasz Wzorek, Mohammad Kamal Asif Khan, Mohammed Jalalah, Mabkhoot A. Alsaiari, Abdulkarem H. M. Almawgani,	Materials, Vol. 14, Issue 20, October 2021. (ISI, Impact Factor: 3.623, Q1)	October 2021	ISI, Q1
41	Concurrent Synthesis and Immobilization of Ag Nanoparticles over TiO ₂ via Plasma Reduction for Photocatalytic Treatment of Methyl Blue in Water	Noor ul Huda Altaf, Muhammad Yasin Naz, Shazia Shukrullah, Abdul Ghaffar, Muhammad Irfan, Dominik Walczak, Adam Glowacz, Mater H. Mahnashi, Saifur Rahman, Grzegorz Królczyk, Ali O. Alqarni, Usama Muhammad Niazi,	Materials, Vol. 14, Issue 19, October 2021. (ISI, Impact Factor: 3.623, Q1)	October 2021	ISI, Q1
42	Statistically Optimized Production of Saccharides Stabilized Silver Nanoparticles Using Liquid- Plasma Reduction Approach for Antibacterial Treatment of Water	Noor ul Huda Altaf, Muhammad Yasin Naz, Shazia Shukrullah, Haq Nawaz Bhatti, Muhammad Irfan, Mabkhoot A. Alsaiari, Saifur Rahman, Usama Muhammad Niazi, Adam Glowacz, Klaudia Proniewska, Lukasz Wzorek,	Materials, Vol. 14, Issue 19, October 2021. (ISI, Impact Factor: 3.623, Q1)	October 2021	ISI, Q1
43	Impact of Novel Image Preprocessing Techniques on Retinal Vessel Segmentation	Toufique Ahmed Soomro, Ahmed Ali, Nisar Ahmed Jandan, Ahmed J .Afifi, Muhammad Irfan, Samar M. Alqhtani, Adam Glowacz, Ryszard Tadeusiewicz, Elias Kańtoch, Lihong Zheng, Ali Alqahtani	Electronics MDPI, Vol. 10, No. 18, September 2021. (ISI, Impact Factor: 2.397, Q3)	September 2021.	ISI, Q3
44	Smart Fire Detection and Deterrent System for Human Savior by Using Internet of Things (IoT),”	Abdul Rehman, Muhammad Ahmed Qureshi, Tariq Ali, Muhammad Irfan, Saima Abdullah, Sana Yasin, Umar Draz, Adam Glowacz, Grzegorz Nowakowski, Abdullah	Energies, (ISI, Impact Factor: 3.004, Q3)	September 2021.	ISI, Q3

		Alghamdi, Abdulaziz A. Alsulami, Mariusz Wegrzyn,			
45	Optimization of Phasor Measurement Unit Placement Using Several Proposed Case Factors for Power Network Monitoring	Maveeya Baba, Nursyarizal B. M. Nor, M. Aman Sheikh, A. Momin Baba, Muhammad Irfan, Adam Glowacz, Jarosław Kozik, Anil Kumar,	Energies, (ISI, Impact Factor: 3.004, Q3)	September 2021.	ISI, Q3
46	Real Time Multipurpose Smart Waste Classification Model for Efficient Recycling in Smart Cities Using Multilayer Convolutional Neural Network and Perceptron	Ali Usman Gondal, Muhammad Imran Sadiq, Tariq Ali, Muhammad Irfan , Ahmad Shaf, Muhammad Aamir, Muhammad Shoaib, Adam Glowacz, Ryszard Tadeusiewicz, Eliaz Kantocho	Sensors	Vol. 21, Issue 14, July 2021	ISI, Q1
47	Analyzing the Features Affecting the Performance of Teachers during Covid-19: A Multilevel Feature Selection	Alqahtani Saeed, Raja Habib, Maryam Zaffar, Khurram Shehzad Quraishi, Oriba Altaf, Muhammad Irfan, Adam Glowacz, Ryszard Tadeusiewicz, Mohammed Ayed Huneif, Alqahtani Abdulwahab, Sharifa Khalid Alduraibi, Fahad Alshehri, Alaa Khalid Alduraibi and Ziyad Almushayti	Electronics MDPI, Vol. 10, No. 14, July 2021. (ISI, Impact Factor: 2.397, Q3)	Jul-21	ISI Q3
48	Distance Measurement of Unmanned Aerial Vehicles Using Vision-Based Systems in Unknown Environments	Wahyu Rahmانيar, Wen-June Wang, Wahyu Caesarendra, Adam Glowacz, Krzysztof Oprzędkiewicz, Maciej Sułowicz and Muhammad Irfan	Electronics	Jul-21	ISI Q3
49	Study of structural, magnetic and optical properties of oxygen plasma-treated manganese-doped iron oxide photocatalyst for wastewater treatment	M. Y. Naz, M. Irfan , S. Shukrullah, I. Ahmad, A. Ghuffar, U. M. Niazi, S. Rahman, M. S. Jalalah, M. A. Alsaiari & M. K. A. Khan	Applied Physics A, June 2021	Jun-21	ISI Q2
50	A Novel Feature Extraction and Fault Detection Technique for the Intelligent Fault Identification of Water Pump Bearings	Muhammad Irfan, Abdullah Saeed Alwadi, Adam Glowacz, Muhammad Awais, Saifur Rahman, Mohammad Kamal Asif Khan, Mohammad Jalalah, Omar Alshorman and Wahyu Caesarendra	Sensors	Jun-21	ISI, Q1

51	Synthesis, Surface Nitriding and Characterization of Ti-Nb Modified 316L Stainless Steel Alloy Using Powder Metallurgy	Sadaqat Ali, Muhammad Irfan , Usama Muhammad Niazi, Ahmad Majdi Abdul Rani ,Imran Shah, Stanislaw Legutko, Saifur Rahman,Mohammed Jalalah , Mabkhoot A. Alsaari, Adam Glowacz and Fahad Salem AlKahtani	Materials, Vol. 14, Issue 12, June 2021	Jun-21	ISI Q2
52	Exploration and determination of algal role as Bioindicator to evaluate water quality – Probing fresh water algae	Saeed Khalil, Mater H.Mahnashi, Manzoor Hussain, Naheed Zafar, Waqar-Un-Nisa, Falak Sher Khan, Umar Afzal, Ghulam Mujtaba Shaha Usama Muhammad Niazi, Muhammad Awais, Muhammad Irfan	Saudi Journal of Biological Sciences	Jun-21	ISI Q2
53	TANVEER: Tri-Angular Nearest Vector-Based Energy Efficient Routing for IoT-Enabled Acoustic Sensor and Actor Networks (I-ASANs)	Umar Draz, Sana Yasin, Muhammad Irfan , Tariq Ali, Amjad Ali, Adam Glowacz, Frantisek Brumercik and Witold Glowacz	Sensors	May-21	ISI, Q1
54	Skin Cancer Detection: A Review Using Deep Learning Techniques	Mehwish Dildar, Shumaila Akram, Muhammad Irfan , Hikmat Ullah Khan, Muhammad Ramzan, Abdur Rehman Mahmood, Soliman Ayed Alsaari, Abdul Hakeem M Saeed , Mohammed Olaythah Alraddadi and Mater Hussien Mahnashi	IJERPH	May-21	ISI, Q1
55	A Novel Method for COVID-19 Diagnosis Using Artificial Intelligence in Chest X-ray Images	Yassir Edrees Almalki, Abdul Qayyum, Muhammad Irfan , Noman Haider, Adam Glowacz, Fahad Mohammed Alshehri, Sharifa K. Alduraibi, Khalaf Alshamrani, Mohammad Abd Alkhalik Basha, Alaa Alduraibi, M. K. Saeed and Saifur Rahman	Healthcare	Apr-21	ISI, Q4
56	De-Emulsification and Gravity Separation of Micro-Emulsion Produced with Enhanced Oil Recovery Chemicals Flooding	Mohammad Kamal Asif Khan, Javed Akbar Khan, Habib Ullah, Hussain H. Al-Kayiem, Sonny Irawan, Muhammad Irfan , Adam	Energies	Apr-21	ISI, Q3

		Glowacz, vHui Liu, Witold Glowacz and Saifur Rahman			
57	Natural Disasters Intensity Analysis and Classification based on Multispectral Images using Multi-layered Deep Convolutional Neural Network	Muhammad Aamir, Tariq Ali, Muhammad Irfan , Ahmad Shaf, Muhammad, Zeeshan Azam, Adam Glowacz, Frantisek Brumercik, Witold Glowacz, Samar Alqhtani, Saifur Rahman	Sensors	Apr-21	ISI, Q1
58	Towards Controlled Transmission: A Novel Power-based Sparsity-aware and Energy Efficient Clustering for UWSN in Marine Transport Safety	Israa Adil Hayder, Sundas Naqeeb Khan, Faisal Althobiani, Muhammad Irfan , Muhammad Idrees, Saeed Ullah, Faisal Alsaq, Adam Glowacz, Iwona Goldasz, Marcin Tomczyk, Radu Martis	Electronics	Apr-21	ISI, Q2
59	Fault diagnosis of angle grinders and electric impact drills using acoustic signals	Adam Glowacz, Ryszard Tadeusiewicz , Stanislaw Legutko , Wahyu Caesarendra , Muhammad Irfan , Hui Liu , Frantisek Brumercik , Miroslav Gutten , Maciej Sulowicz , Jose Alfonso Antonino Daviu, Thompson Sarkodie-Gyan, Pawel Fracz, Anil Kumar, Jiawei Xiang	Applied Acoustics	Apr-21	ISI, Q2
60	Role of Hybrid Deep Neural Networks (HDNNs), Computed Tomography and Chest X-rays for the Detection of COVID-19	Muhammad Irfan, Aksam Iftikhar, Sana Yasin, Umar Draz, Tariq Ali, Shafiq Hussain, Sarah Bukhari, Abdullah Alwadie, Saifur Rahman, Adam Glowacz, Faisal Althobiani	IJERPH	Mar-21	ISI, Q1
61	Security Framework for IoT Based Real-Time Health Applications	Aamir Hussain, Tariq Ali, Faisal Althobiani, Umar Draz, Muhammad Irfan , Sana Yasin , Saher Shafiq , Zanab Safdar, Adam Glowacz, Grzegorz Nowakowski, Muhammad Salman Khan, Samar Alqhtani	Electronics	Mar-21	ISI, Q2
62	Sound and Acoustic Emission-based Early Condition Monitoring and Fault Diagnosis of Induction Motor: A Review Study	AlShorman Omar, Alkahtani Fahad, Masadeh Mahmoud, Muhammad Irfan , Glowacz Adam, Althobiani Faisal, Kozik Jaroslaw, Glowacz Witold	Advances in Mechanical Engineering	Feb-21	ISI, Q4

63	Mitigation of Phase Noise and Nonlinearities for High Capacity Radio-over-Fiber Links	Muhammad Kamal Asif Khan, Farman Ali, Muhammad Irfan , Fazal Muhammad, Faisal Althobiani, Asar Ali, Suliman Khan, Saifur Rahman, Grzegorz Perun, Adam Glowacz	Electronics	Feb-21	ISI, Q2
64	An Optimal Framework for WDM Systems using Analytical Characterization of Refractive Index Related Nonlinear Impairments	Muhammad Irfan, Farman Ali, Fazal Muhammad, Abdullah Alwadie, Adam Glowacz, Iwona Goldasz, Ryszard Mielnik, Fahad Salem Alkahtani, Hidayatullah Khan	Electronics	Jan-21	ISI, Q2
65	Empirical Assessment of Machine Learning Techniques for Software Requirements Risk Prediction	Rashid Naseem, Zain Shaukat, Muhammad Irfan , Muhammad Shah, Arshad Ahmad, Fazal Muhammad, Adam Glowacz, Larisa Dunai, Jose Antonino-Daviu, Adel Sulaiman	Electronics	Jan-21	ISI, Q2
66	Numerical analysis of non-aligned inputs M-type micromixers with different shaped obstacles for biomedical applications	M. Irfan et al.	J. Process Mech. Eng.	2021	ISI, Q2
67	Compact Elliptical UWB Antenna for Underwater Wireless Communications	Adam R. H. Alhawari, Sama F. Majeed, Tale Saeidi, Sajid Mumtaz, Hisham Alghamdi, Ayman Taher Hindi, Abdulkarem H. M. Almwagani, Muhammad Ali Imran and Qammer H. Abbasi	micromachines	April 2021	ISI (2.891)
68	Wearable Metamaterial Dual-Polarized High Isolation UWB MIMO Vivaldi Antenna for 5G and Satellite Communications	Adam R. H. Alhawari, Tale Saeidi, A. H. M. Almwagani, Ayman Taher Hindi, Hisham Alghamdi, Turki Alsuwian, Samer A. B. Awwad and Muhammad Ali Imran	micromachines	Dec. 2021	ISI (2.891)
69	Metamaterial-based wearable flexible elliptical UWB antenna for WBAN and breast imaging applications	A. R. H. Alhawari, A. H. M. Almwagani, A. T. Hindi, H. Alghamdi, and T. Saeidi	AIP Adv.	2021	ISI, Q4
70	Fabrication and characterization of high-	Hasan Albargi, ZR Khan, R Marnadu, HY Ammar, Hassan	Journal of King Saud University-Science	2021/12/1	ISI

	performance photodetectors based on Au/CdS/Au and Au/Ni: CdS/Au junctions	Algadi, Ahmad Umar, IM Ashraf, Mohd Shkir			
71	Deposition of nanostructured Sn doped Co ₃ O ₄ films by a facile nebulizer spray pyrolysis method and fabrication of p-Sn doped Co ₃ O ₄ /n-Si junction diodes for opto-nanoelectronics	Hasan Albargi, R Marnadu, G Sujithkumar, Ali S Alkorbi, Hassan Algadi, Mohd Shkir, Ahmad Umar, Gedi Sreedevi	Sensors and Actuators A: Physical	2021/12/1	ISI
72	Enhanced photoresponsivity of anatase titanium dioxide (TiO ₂)/nitrogen-doped graphene quantum dots (N-GQDs) heterojunction-based photodetector	Hassan Algadi, Hasan Albargi, Ahmad Umar, Mohd Shkir	Advanced Composites and Hybrid Materials	2021/10/12	ISI
73	p-CuO/n-ZnO Heterojunction Structure for the Selective Detection of Hydrogen Sulphide and Sulphur Dioxide Gases: A Theoretical Approach	Hasan Albargi, Hussein Y Ammar, Heba M Badran, Hassan Algadi, Ahmad Umar	Coatings	2021/10	ISI
74	Tetracyanonickelate (II)/KOH/reduced graphene oxide fabricated carbon felt for mediated electron transfer type electrochemical sensor for efficient detection of N ₂ O gas at room ...	AG Ramu, Ahmad Umar, S Gopi, Hassan Algadi, Hasan Albargi, Ahmed A Ibrahim, Mabkhoot A Alsaiari, Yao Wang, Dongjin Choi	Environmental Research	2021/10/1	ISI
75	MnO ₂ Nanoparticles Anchored Multi Walled Carbon Nanotubes as Potential Anode Materials for Lithium Ion Batteries	Ahmad Umar, Faheem Ahmed, Ahmed A Ibrahim, Hassan Algadi, Hasan B Albargi, Mohsen Ali M Alhmami, Tubia Almas, Ayeda YA Mohammed, Hatem Abuhimd, L Castañeda	Journal of Nanoscience and Nanotechnology	2021/10/1	ISI
76	First principles investigation of physically conductive bridge filament formation of aluminum doped perovskite materials for neuromorphic memristive applications	Turki Alsuwian, Farhana Kousar, Umbreen Rasheed, Muhammad Imran, Fayyaz Hussain, RM Arif Khalil, Hassan Algadi, Najaf Batool, Ejaz Ahmad Khera, Saira Kiran, Muhammad Naeem Ashiq	Chaos, Solitons & Fractals	2021/9/1	ISI
77	Gradual resistive switching and synaptic properties of		Materials Letters	2021/9/1	ISI

	ITO/HfAlO/ITO device embedded with Pt nanoparticles	Hassan Algadi, Chandreswar Mahata, Turki Alsuwian, Muhammad Ismail, Daewoong Kwon, Sungjun Kim			
78	Ultrathin Leaf-Shaped CuO Nanosheets Based Sensor Device for Enhanced Hydrogen Sulfide Gas Sensing Application	Ahmad Umar, Hassan Algadi, Rajesh Kumar, Mohammad Shaheer Akhtar, Ahmed A Ibrahim, Hasan Albargi, Mohsen AM Alhamami, Turki Alsuwian, Wen Zeng	Chemosensors	2021/8	ISI
79	Correction to: Selective ethanol gas sensing performance of flower-shaped CuO composed of thin nanoplates	Ahmad Umar, AA Ibrahim, Hassan Algadi, Umesh T Nakate, Sandip P Choudhury, Turki Alsuwian, Hasan Albargi, Mabkhoot A Alsaiari, S Baskoutas	Journal of Materials Science: Materials in Electronics	2021/7	ISI
80	α -MnO ₂ Nanowires as Potential Scaffolds for a High-Performance Formaldehyde Gas Sensor Device	Ahmad Umar, Ahmed A Ibrahim, Rajesh Kumar, Hassan Algadi, Hasan Albargi, Faheem Ahmad, Wen Zeng, M Shaheer Akhtar	Coatings	2021/7	ISI
81	First principles investigation of oxygen vacancies filaments in polymorphic Titania and their role in memristor's applications	Farhana Kousar, Umbreen Rasheed, RM Arif Khalil, Niaz Ahmad Niaz, Fayyaz Hussain, Muhammad Imran, Umema Shakoor, Hassan Algadi, Naeem Ashiq	Chaos, Solitons & Fractals	2021/7/1	ISI
82	Design of a unique "ON/OFF" switch electrochemical aptasensor driven by the pH for the detection of Aflatoxin B1 in acid solutions based on titanium carbide/carboxylated ...	Wenjuan Guo, Ahmad Umar, Hassan Algadi, Hasan Albargi, Ahmed A Ibrahim, Kaili Cui, Luyan Wang, Meishan Pei, Yao Wang	Microchemical Journal	2021/6/21	ISI
83	Highly sensitive and selective 2-nitroaniline chemical sensor based on Ce-doped SnO ₂ nanosheets/Nafion-modified glassy carbon electrode	Ahmad Umar, Rajesh Kumar, Hassan Algadi, Jahir Ahmed, Mohammed Jalalah, AA Ibrahim, Farid A Harraz, Mabkhoot A Alsaiari, Hasan Albargi	Advanced Composites and Hybrid Materials	2021/6/12	ISI
84	Enhanced NO ₂ Gas Sensor Device based on supramolecularly assembled polyaniline/silver oxide/graphene oxide composites	Ahmad Umar, Ahmed A Ibrahim, Hassan Algadi, Hasan Albargi, Mabkhoot A Alsaiari, Yao Wang, Sheikh Akbar	Ceramics International	2021/6/7	ISI

85	Carbon Nanodots as a Potential Transport Layer for Boosting Performance of All-Inorganic Perovskite Nanocrystals-Based Photodetector	Hassan Algadi, Ahmad Umar, Hasan Albargi, Turki Alsuwian, Sotirios Baskoutas	Crystals	2021/6	ISI
86	Selective ethanol gas sensing performance of flower-shaped CuO composed of thin nanoplates	Ahmad Umar, AA Ibrahim, Hassan Algadi, Umesh T Nakate, Sandip P Choudhury, Turki Alsuwian, Hasan Albargi, Mabkhoot A Alsaiari, S Baskoutas	Journal of Materials Science: Materials in Electronics	2021/6/2	ISI
87	Controlled multilevel switching and artificial synapse characteristics in transparent HfAlO-alloy based memristor with embedded TaN nanoparticles	Chandreswar Mahata, Hassan Algadi, Muhammad Ismail, Daewoong Kwon, Sungjun Kim	Journal of Materials Science & Technology	2021/6/1	ISI
88	CdO-ZnO nanorices for enhanced and selective formaldehyde gas sensing applications	Ahmad Umar, Ahmed A Ibrahim, Rajesh Kumar, Hassan Algadi, Hasan Albargi, Mabkhoot A Alsaiari, Mohsen AM Alhmami, Wen Zeng, Faheem Ahmed, Sheikh Akbar	Environmental Research	2021/5/28	ISI
89	Perforated Co3O4 nanosheets as high-performing supercapacitor material	Ahmad Umar, Siddheshwar D Raut, Ahmed A Ibrahim, Hassan Algadi, Hasan Albargi, Mabkhoot Alsaiari, M Shaheer Akhtar, Mohammad Qamar, Sotirios Baskoutas	Electrochimica Acta	2021/5/24	ISI
90	Direct sunlight-driven enhanced photocatalytic performance of V2O5 nanorods/graphene oxide nanocomposites for the degradation of Victoria blue dye	M Beaula Ruby Kamalam, SSR Inbanathan, K Sethuraman, Ahmad Umar, Hassan Algadi, Ahmed A Ibrahim, Qazi Inamur Rahman, Christos S Garoufalos, Sotirios Baskoutas	Environmental Research	2021/5/24	ISI
91	Corn-cob-derived Activated Carbon for Efficient Adsorption Dye in Sewage	Zhe Sun, Keqi Qu, Yang Cheng, Yue You, Zhanhua Huang, Ahmad Umar, Yousif SA Ibrahim, Hassan Algadi, L Castañeda, Henry A Colorado, Zhanhu Guo	ES Food & Agroforestry	2021/5/23	ISI
92	Synthesis of porous 2D layered nickel oxide-reduced graphene oxide (NiO-rGO) hybrid composite for the efficient electrochemical detection of epinephrine in biological fluid	AG Ramu, Ahmad Umar, Ahmed A Ibrahim, Hassan Algadi, Yousif SA Ibrahim, Yao Wang, Marlia M Hanafiah, P Shanmugam, Dongjin Choi	Environmental Research	2021/5/23	ISI
93	Direct sunlight-driven enhanced photocatalytic performance of V2O5 nanorods/ graphene oxide nanocomposites for the degradation of Victoria blue dye.	SSR Inbanathan, K Sethuraman, A Umar, H Algadi, AA Ibrahim, QI Rahman, CS Garoufalos, S Baskoutas	Environmental Research	2021/5/22	ISI
94	Theoretical Investigation of CsBX3 (B= Pb, Sn; X= I, Br,	Ejaz Ahmad Khera, Hafeez Ullah, Muhammad Imran, RM	Advanced Theory and Simulations	2021/5/21	ISI

Department of Electrical Engineering

قسم الهندسة الكهربائية

	Cl) Using Tran–Blaha Modified Becke–Johnson Approximation for Flexible Photoresponsive Memristors	Arif Khalil, Fayyaz Hussain, Hassan Algadi			
95	Star-Fruit-Shaped CuO Structures for High Performance Ethanol Gas Sensor Device	Ahmad Umar, Ahmed A Ibrahim, Rajesh Kumar, Hassan Algadi, Hasan Albargi, Mohsen AM Alhamami, Umesh T Nakate, Sotirios Baskoutas	Science of Advanced Materials	2021/4/1	ISI
96	Improvement of Photoresponse Properties of Self-Powered ITO/InP Schottky Junction Photodetector by Interfacial ZnO Passivation	Hassan Algadi, Chandreswar Mahata, Sungjun Kim, Goutam Kumar Dalapati	Journal of Electronic Materials	2021/4	ISI
97	Methylene blue intercalated layered MnO ₂ nanosheets for high-sensitive non-enzymatic ascorbic acid sensor	P Paulraj, Ahmad Umar, K Rajendran, A Manikandan, A Sathamraja, R Kumar, E Manikandan, K Pandian, S Baskoutas, Hassan Algadi, Ahmed A Ibrahim, Mabkhoot A Alsaari	Journal of Materials Science: Materials in Electronics	2021/4	ISI
98	Nano-structured CuO on Silicon Using a Chemical Bath Deposition Process and Sputter Seed Layer	Shamili Bandaru, Chandreswar Mahata, Sabyasachi Chakraborty, Siddhartha Ghosh, Hassan Algadi, Seeram Ramakrishna, Goutam Kumar Dalapati	Journal of Electronic Materials	2021/4	ISI
99	Improvement of Photoresponse Properties of Self-Powered ITO/InP Schottky Junction Photodetector by Interfacial ZnO Passivation	Hassan Algadi, Chandreswar Mahata, Sungjun Kim, Goutam Kumar Dalapati	Journal of Electronic Materials	2021/4	ISI
100	Density functional theory insight into metal ions and vacancies for improved performance in storage devices	Umbreen Resheed, Turki Alsuwian, Muhammad Imran, Hassan Algadi, Ejaz Ahmad Khera, RM Arif Khalil, Chandreswar Mahata, Fayyaz Hussain	International Journal of Energy Research	2021/3/8	ISI
101	Research progress on catalytic pyrolysis and reuse of waste plastics and petroleum sludge	Duo Pan, Fengmei Su, Hu Liu, Chuntai Liu, Ahmad Umar, L Castañeda, Hassan Algadi, Caiyun Wang, Zhanhu Guo	ES Materials & Manufacturing	2021/1/31	ISI
102	Highly Sensitive and Selective Eco-Toxic 4-Nitrophenol Chemical Sensor Based on Ag-Doped ZnO Nanoflowers Decorated with Nanosheets	Ahmad Umar, M Shaheer Akhtar, Hassan Algadi, Ahmed A Ibrahim, Mohsen AM Alhamami, Sotirios Baskoutas	Molecules	2021/1	ISI
103	The First Principle Study Of Comparison Of Divalent And Trivalent Impurity In Rram Devices Using Gga+ U	Ejaz Ahmad Khera, Hafeez Ullah, Muhammad Imran, Hassan Algadi, Fayyaz Hussain, Rana Muhammad Arif Khalil	Surface Review and Letters (SRL)	2021	ISI
104	Conducting polymer based hybrid cells for concurrent solar energy harvesting and charge storage	Arash Takshi, Tareq Kareri, Belqasem Aljafari	New Concepts in Solar and Thermal Radiation Conversion IV	2021/8/5	ISI
105	Hybrid photovoltaic-supercapacitors: effect of the counter electrode on the device performance	Tareq Kareri, Belqasem Aljafari, Arash Takshi	New Concepts in Solar and Thermal Radiation Conversion IV	2021/8/1	ISI
106	A critical review on the voltage requirement in hybrid cells with solar energy harvesting and energy storage capability	Arash Takshi, Belqasem Aljafari, Tareq Kareri, Elias Stefanakos	Batteries & Supercaps	2021/2/1	ISI

107	Optimum Placement of Distribution Generation Units in Power System with Fault Current Limiters Using Improved Coyote Optimization Algorithm	Hisham Alghamdi	Entropy	2021/6	ISI
-----	---	-----------------	---------	--------	-----

Table 3. Analysis of Journal Publications

Total Faculty Members	Ph.D faculty members	Total Journal Papers	Papers/ Ph.D faculty member	Remarks
19	16	107	107/16 = 6.68	The annual target to publish a minimum 15 journal papers has been achieved.

Research Citations:

The research citations of the each faculty member for the year 2021 are shown in Table 4. In 2021, research papers of EE faculty member were cited **1472 times**. The citations data has been collected from the google scholar profiles.

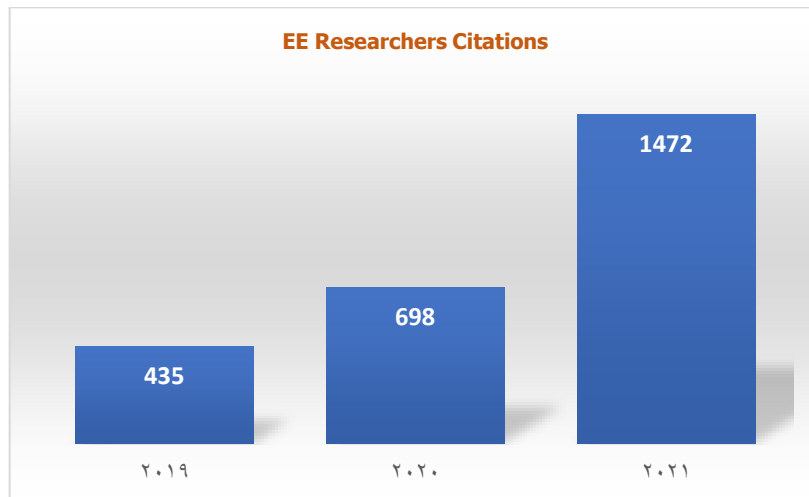


Table 4. Research Citations

Sr. No	Faculty Member Name	Total Citations in 2019	Total Citations in 2020	Total Citations in 2021	Google Scholar Profile Link
1	Dr. Saleh AlMasabi	25	33	52	https://scholar.google.com/citations?hl=en&user=Y-KKKNgAAAAJ&view_op=list_works&alert_preview_top_rm=2&sortby=pubdate
2	Dr. Mohammed Saeed Jalalah	43	89	294	https://scholar.google.com/citations?user=PJdo3zIAAAAJ&hl=ar
3	Dr. Muhammad Irfan	93	120	412	https://scholar.google.com/citations?user=3Ovr9eQAAAJ&hl=en
4	Dr. Ahmad Alzaharani	96	132	162	https://scholar.google.com/citations?hl=en&user=LRP1IHcAAAAJ&view_op=list_works&sortby=pubdate

5	Dr. Belqasem Aljafari	8	13	26	https://scholar.google.com/citations?hl=en&user=JWrjzogAAAAJ&view_op=list_works&gmla=AJsN-F7fkveoyPXyl4usxyD0uOLB1543whNLdAngqUdO_5UNNdNaAVLa-nNn27c_vnZV-nkPpdmaKkOWi41a-
6	Dr. Hassan Algadi	120	177	291	https://scholar.google.com/citations?hl=en&user=7AYbQP8AAAAJ&view_op=list_works&sortby=pubdate
7	Dr. Abdulkarem Hussein Mohammed Almagani	4	14	29	https://scholar.google.com/citations?user=5GjnJeAAAAAJ&hl=ar
8	Dr. Adam Reda Alhawari	37	93	97	
9	Dr. Saifur Rahman	5	24	108	
10	Dr. Ayman Hindi	2		1	
11	Dr. Seif Shebel	2	3	0	https://scholar.google.com/citations?user=S3kqtNIAAAAJ&hl=ar#d=gsc_md_hist
Total Citations		435	698	1472	

Research Grants:

The EE faculty members are keen to apply for research grants. The main source of research grants is the Deanship of Scientific Research (DSR), Najran University KSA. The DSR provides opportunity to every Ph.D faculty member to get 02 research grants in every year. Furthermore, the Ministry of Education KSA and King Abdulaziz City for Science & Technology (KACST) also open research grants occasionally. The research grants secured by EE faculty members in year 2021 are given in Table 5. The target of research grants in 05 year research plan of EE department has been to get minimum 05 grants every year. The Table 5 indicates that the yearly target to secure minimum 05 research grants has been achieved.

Table 5. Research Grants in Year 2021

No.	Grant Title (Project Title)	Project Members	Grant Awarded By	Grant Amount	Grant Acceptance (Released) Date	Grant Duration
1	Electricity Theft Detection using Adaptive Boosting based on Corona Virus Herd Immunity and Forensic Based Investigation Optimizer	Dr. Muhammad Irfan Prof. Dr. Abdullah S Alwadie	Deanship of Scientific Research, Najran University Saudi Arabia	38,400 SAR	May 2021	01 Year
2	Electricity Load and Price Forecasting using CNN and SVM based on Corona Virus Herd Immunity Optimizer	Dr. Muhammad Irfan Prof. Dr. Abdullah S Alwadie Dr. Saifur Rahman	Deanship of Scientific Research, Najran University Saudi Arabia	38,400 SAR	May 2021	01 Year
3	Wearable Metamaterial Dual-Polarized High Isolation UWB MIMO Vivaldi Antenna for 5G and Satellite Communications	Dr. Adam Alhawari Dr. Abdulkarem Dr. Ayman	Deanship of Scientific Research, Najran University Saudi Arabia	38,400 SAR	May 2021	01 Year
4	Hiding confidential data using hybrid image steganography method with LZW and genetic algorithm	Dr. Abdulkarem Dr. Adam Dr. Ayman	Deanship of Scientific Research, Najran University Saudi Arabia	38,400 SAR	May 2021	01 Year

5	Analyzing Distributed Vibrating Sensing Technologies in Optical Meshes	Dr. Saifur Rahman Dr. Shahed Akond Dr. Salim Mursal	Deanship of Scientific Research, Najran University Saudi Arabia	38,400 SAR	May 2021	01 Year
---	--	---	---	------------	----------	---------

Community Service:

The Research & Community Service Committee (RCSC) is committed to the promotion of faculty participation in community service activities through the organization and coordination between faculty members and the Center for Scientific Research (CSR) at the College of Engineering. Each year, the committee encourages faculty members to participate in delivering workshops and scientific seminars for both other faculty members and students of EE department.





Last year, and due to the (COVID-19) Coronavirus pandemic, many workshops and sessions that were planned have been delayed, rescheduled or canceled. Committee members were able to get responses from only six faculty members about the workshops they have presented throughout the academic year. The following table shows some of the titles that has been contributed and the respective name(s) of the faculty member(s) who were responsible for its presentation.

Table 6. Community Service Activities in Year 2021

No.	Title seminars/workshops organized	Name of faculty member
1	Webinar on MATLAB programming	Dr. Muhammad Irfan
2	Deliver Courses at Najran Technology College	Dr. Abdulkarem Almawgani
3	Deliver Courses at Najran Technology College	Dr. Seif Shebl Seif
4	Deliver Courses at Najran Technology College	Dr. Muhammad Irfan
5	Deliver Courses at Najran Technology College	Dr. Saifur Rahman
6	Deliver Courses at Najran Technology College	Dr. Belqasem Aljafari
7	Next Generation Solar cells	Dr. Mohammed Jalah, Dr. Hassan Algadi, Dr. Belqasem Aljafari
8	Introduction to Graduation Projects	Dr. Adam, Dr. Abdulkarem, Dr Aymen
9	Electrical Engineering Project Ideation	Dr. Ahmad Alzahrani

Concluding Remarks:

- The 05 years research plan of EE department targets to publish minimum 15 journal papers. This target has been achieved and research performance is satisfactory.
- The 05 years research plan of EE department targets to get minimum 05 research grants in every year. This target has been achieved and research performance is satisfactory.
- The 05 years research plan of EE department targets to organize minimum 10 technical workshops/seminars/trainings in EE department. This target has not been achieved and it is recommended to encourage all faculty members to organize a minimum one workshop/seminar/training in each academic year.
- It is recommended that all faculty members reply to the emails sent for data collection related to research and community service.

Report Prepared By:	Dr. Muhammad Irfan				
	Signature: 				
	Date: 16 Jan 2022				
Reviewed By:	Dr. Ahmad Alzahrani	Dr. Belqasem Aljafari	Dr. Hasan Alqadi	Engr. Mesfer AlNajrani	Engr. Saleh Aldawseri
	Signature: 	Signature: 	Signature:	Signature: 	Signature:
	Date: 16 Jan 2022	Date: 16 Jan 2022	Date: 16 Jan 2022	Date: 16 Jan 2022	Date: 16 Jan 2022