

Balochistan Journal of Engineering & Applied Sciences (BJEAS)

HEC RECOGNIZED IN "Y" CATEGORY



Volume 4
No.1

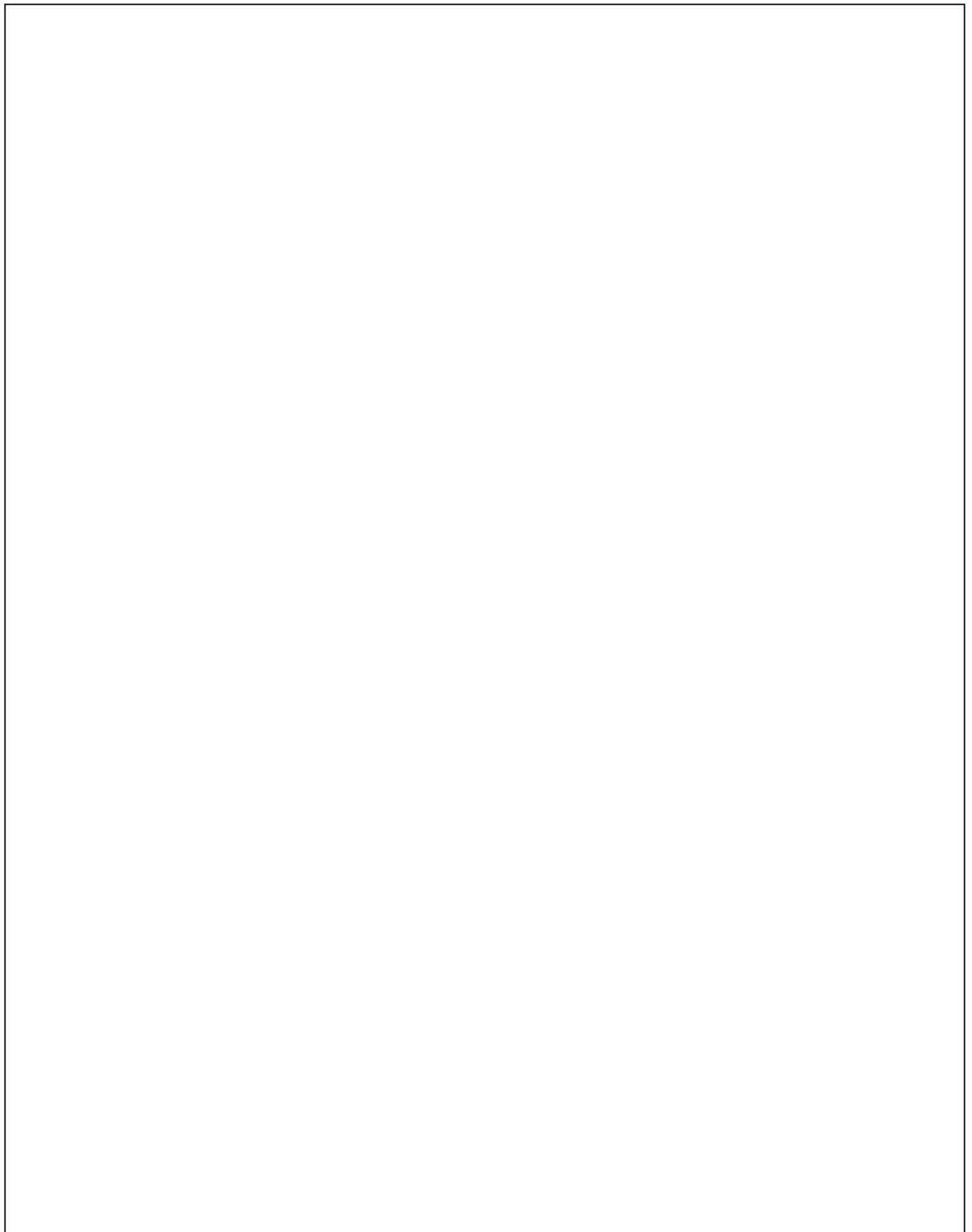


Website: <https://bjeas.buetk.edu.pk>

Email: bjeas.journal@buetk.edu.pk

p-ISSN: 2518-2706

June 2021





Balochistan Journal of Engineering & Applied Sciences (BJEAS)

HEC Recognized in “Y” Category

Volume 4, No. 1

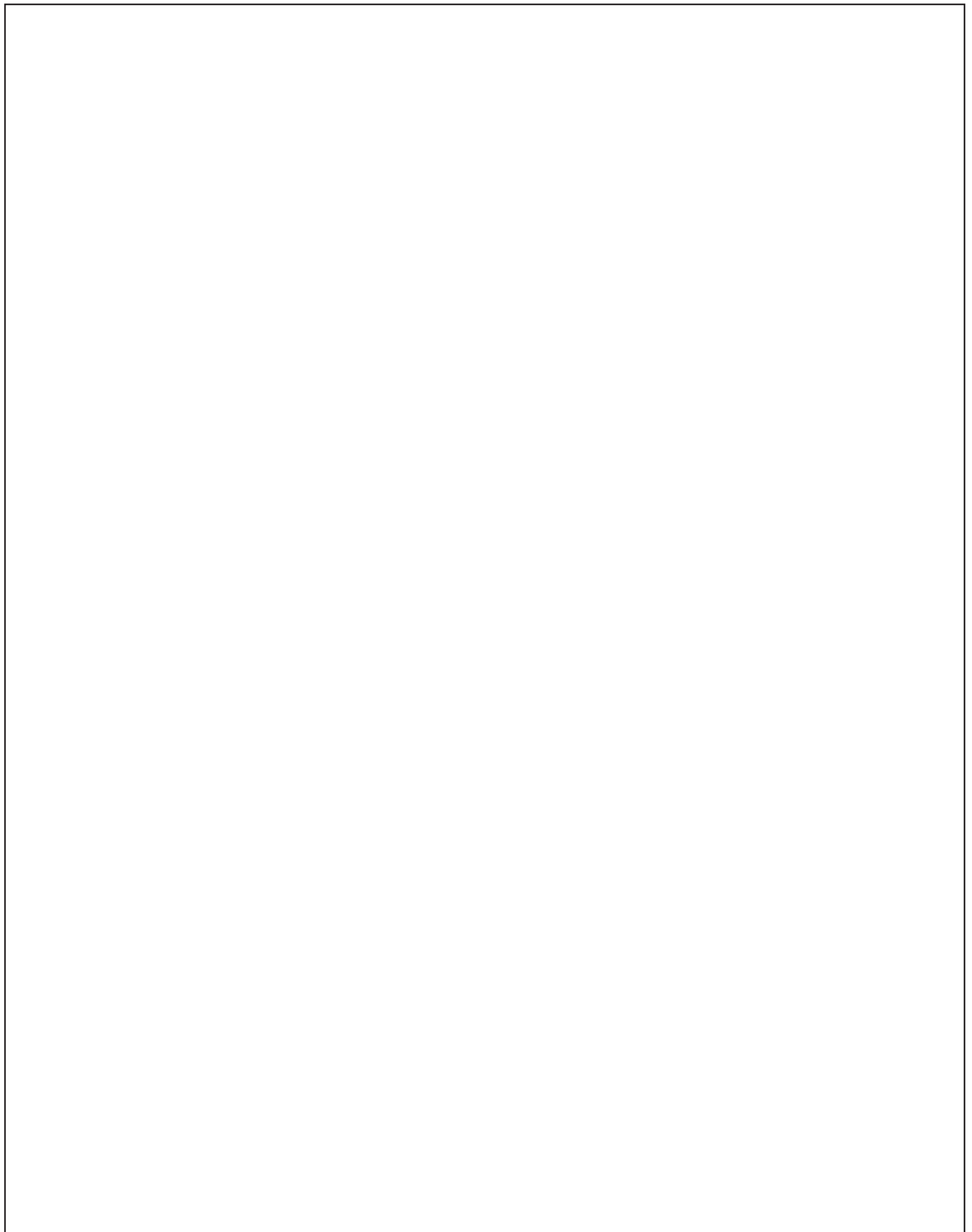
June 2021

Balochistan University of Engineering & Technology, Pakistan

Email: bjeas.journal@buetk.edu.pk

p-ISSN: 2518-2706

This Publication has been partially funded by the Higher Education Commission (HEC), Islamabad,
which highly acknowledge





Balochistan Journal of Engineering & Applied Sciences (BJEAS)

BJEAS is a biannual research journal published by the Balochistan University of Engineering and Technology (BUET) Khuzdar, through the Office of Research, Innovation and Commercialization (ORIC). It is dedicated to the dissemination of research among institutions, universities, researchers, and students with the promotion of quality on national and international levels as its main objectives.

BUETK is a renowned degree awarding institute of Engineering and Technology dedicated to providing quality education and promoting research activities in Pakistan and on international levels as well. It is a public-sector university established by the Government of Pakistan in 1987 and is approved and recognized by Higher Education Commission (HEC) of Pakistan and Pakistan Engineering Council (PEC).

Guidelines for Authors

BJEAS seeks to publish research papers that identify, extend, or unify scientific knowledge and research pertaining to engineering and applied sciences.

The researchers/ authors are requested to submit well-researched and original unpublished papers, not already submitted to another journal for publication. Papers are accepted after approval through a process of double-blind peer-reviewed by independent reviewers.

Copyright

All the research papers published in this issue are licensed under the p-ISSN No: 2518-2706. Which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.



Patron-in-Chief's Message

I am delighted to have the opportunity to share a few thoughts at the time of publication of the upcoming issue of BJEAS. In this era of technological advancements, it is necessary that research work carried out in various engineering and sciences disciplines is recognized and propagated properly. BJEAS is a step towards disseminating high-quality research nationally as well as globally while maintaining the unique recognition of Balochistan. I believe that this Journal will become a hallmark of research in the future. As Patron-in-Chief, I will ensure that BJEAS remains in line with rapidly shifting scientific communication landscape, while also maintaining and intensifying the high standards of academic excellence.

I sincerely hope that research articles published by BJEAS will provide insightful and stimulating information to readers and scholars that will shape our future and lead the way to extraordinary discoveries.

Prof. Dr. Ehsanullah Khan Kakar

Vice Chancellor

Balochistan UET, Khuzdar



Aims of Journal

BJEAS is a quality publication of peer-reviewed and refereed journal from diverse fields in sciences, Engineering and Technologies that emphasizes new research, development and their applications. BJEAS provides an open-access forum for scientists, scholars, researchers and engineers to exchange their research work, technical notes & surveying results among professionals through print and online publications.

Scope of Journal (but not limited to)

- | | |
|---------------------------------------|-------------------------------------|
| • Applied science | • Mathematics |
| • Electrical engineering | • Computer engineering |
| • Electronic engineering | • Optical engineering |
| • Power engineering | • Mechanical engineering |
| • Acoustical engineering | • Manufacturing engineering |
| • Thermal engineering | • Vehicle engineering |
| • Automotive engineering | • Aerospace engineering |
| • Naval architecture | • Agricultural engineering |
| • Bioprocess engineering | • Food engineering |
| • Aquaculture engineering | • Applied engineering |
| • Automation/Control systems/Robotics | • Computer-aided drawing and design |
| • Construction | • Electronics |
| • Manufacturing | • Graphics |
| • Biological engineering | • Nanotechnology |
| • Genetic engineering | • Biomedical engineering |
| • Biological organisms | • Biochemical engineering |
| • Protein engineering | • Tissue engineering |
| • Energy engineering | • Building services engineering |
| • Manufacturing engineering | • Industrial engineering |
| • Systems engineering | • Component engineering |
| • Textile engineering | • Construction engineering |
| • Reliability engineering | • Safety engineering |
| • Nanoengineering | • Mechatronics |
| • Petroleum engineering | • Chemical engineering |

Review Policy of Journal

This journal has zero tolerance against plagiarism. All submitted papers are scanned through an approved Plagiarism detection software as per HEC guidelines. After plagiarism check, the papers are reviewed under double-blind peer review process.

Submission and acceptance of papers depend upon the response of the reviewers. Plagiarism checking, and review process may take from four weeks to eight weeks depending upon the response from the reviewers and compliance from authors. After satisfactory review, the Editorial Board accepts the paper for publication and acceptance letter is issued to the author(s).



MANAGING BOARD

PATRON-IN-CHIEF
Dr. Ehsanullah Khan Kakar

PATRON
Dr. Syed Mushtaq Ahmed Shah

CHIEF EDITOR
Dr. Khair Muhammad Kakar

MANAGING EDITORS
Dr. Shabbar Naqvi
Dr. Ayaz H. Jarwar

CO-EDITORS

Dr. Khadija Qureshi
Mehran UET, Jamshoro,
Pakistan

Dr. Amanullah Marri
NED University, Karachi,
Pakistan

Dr. Safdar Hussain Bouk
DGIST, Daegu,
South Korea

Dr. Salah Uddin
Balochistan UET, Khuzdar,
Pakistan

Dr. Saleem Iqbal
University of Balochistan,
Quetta, Pakistan

Dr. Abdul Malik Tareen
University of Loralai,
Loralai, Pakistan

Dr. Ali Raza Shah
Balochistan UET, Khuzdar,
Pakistan

Dr. Tipu Sultan
University of M&T, Lahore,
Pakistan

Dr. Faisal Ahmed
CEME NUST, Islamabad,
Pakistan

Dr. Inayat Ali
Balochistan UET, Khuzdar,
Pakistan

Dr. Imran Sarwar
Balochistan UET, Khuzdar,
Pakistan

Dr. Inam Ullah Bhatti
Mehran UET, Jamshoro,
Pakistan

Dr. Nawab Faseeh Qureshi
Sungkyunkwan University, Seoul,
South Korea

Dr. Dileep Kumar
University of Suwan, Suwan,
South Korea

Dr. Aamir Zeb Shaikh
NED UET, Karachi,
Pakistan

Dr. Faizullah Maher
Balochistan UET, Khuzdar,
Pakistan

Dr. Jalal Shah
Balochistan UET, Khuzdar,
Pakistan

Dr. Ali Nawaz Mengal
Mir Chakar Khan Rind University,
Sibi, Pakistan

Dr. Sohrab Bizanjo
Balochistan UET, Khuzdar,
Pakistan

Dr. Waseem Asghar Khan
Balochistan UET, Khuzdar,
Pakistan

Dr. Raza Haider
Balochistan UET, Khuzdar,
Pakistan

Dr. Rashid
Balochistan UET, Khuzdar,
Pakistan



INTERNATIONAL EDITORIAL ADVISORY BOARD

Dr. Safeeullah Soomro

AMA International
University,
Salamabad, Bahrain

Dr. Osama Yousaf ababneh

Zarqa University, Zarqa,
Jordan

Dr. M. Mowafaq

Sungkyunkwan University,
Suwon, South Korea

Dr. Hazlina Binti Hamdan

Universiti Putra Malaysia,
Serdang, Malaysia

Dr. Imdadullah Thaheem

DGIST, Daegu,
South Korea

Dr. Muhammad Adil Zehri

P&D, Balochistan,
Pakistan

Dr. Imran Ali

Datacom (pvt) Ltd,
Australia

Dr. Emrah Evren kara

Düzce University, Düzce,
Turkey

Dr. Ahmet Ocak

Ađry Ýbrahim Çeçen
University,
Ađry, Turkey

Dr. Ali Kashif Bashir

University of Faroe Islands,
Tórshavn, Faroe Island

Dr. Mustafa Imran Ali

Arm Limited,
United Kingdom

Dr. Sohail Akhtar

Concordia University,
Montreal, Canada

Dr. Gul Agha

Illinois University Urbana
Champaign,
Ili, USA

Dr. Syed Zahoor Ul Haque

Caledonian College of Engineering,
Muscat, Oman

Dr. Javed Ali

Caledonian College of Engineering,
Muscat, Oman

Dr. Din Muhammad

University of Wollongong,
Wollongong, Australia

Dr. Dileep Kumar

University of Suwon, Suwon,
South Korea

Dr. Nawab Faseeh Qureshi

Sungkyunkwan University, Seoul,
South Korea

Dr. Onur Saldır

Van Yüzüncü Yıl University, Van,
Turkey

Dr. Muhammad Arsalan Shehzad

Georgia Institute of Technology,
Atlanta, USA

Dr. Syed Chattan Shah

Hankuk University of Foreign
Studies,
Seoul, South Korea

Dr. Safdar Hussain Bouk

DGIST, Daegu,
South Korea

Dr. Syed Saad Azhar

Universiti Teknologi PETRONAS,
Perk, Malaysia

Dr. Daphne Teck Ching Lai

Universiti Brunei Darussalam,
Bandar Seri Begawan, Brunei



NATIONAL EDITORIAL ADVISORY BOARD

Dr. Ajaz Bashir Janjua
HMC, Taxila,
Pakistan

Dr. Usman Azhar
BUIITEMS, Quetta,
Pakistan

Dr. Faisal Ahmed
CEME NUST, Islamabad,
Pakistan

Dr. Tipu Sultan
University of M&T, Lahore,
Pakistan

Dr. Ramesh Kumar
Dawood UET, Karachi,
Pakistan

Dr. Feroz Ahmed Soomro
QUEST, Larkana,
Pakistan

Dr. Safiullah Soomro
QUEST, Larkana,
Pakistan

Dr. Imtaiz Ahmed Halepoto
QUEST, Nawabshah,
Pakistan

Dr. Aziz Ahmed Memon
Sukkur IBA University,
Sukkur, Pakistan

Dr. Muhammad Asim
Sukkur IBA University,
Sukkur, Pakistan

Dr. Saqib Siddiquie
BUIITEMS, Quetta,
Pakistan

Dr. Irfan Ali Bacho
Mehran UET, Jamshoro,
Pakistan

Dr. Aftab Hameed Memon
QUEST, Nawabshah,
Pakistan

Dr. Shakil Ahmed
Sir Syed UET, Karachi,
Pakistan

Dr. Muhammad Asim
University of Karachi, Karachi,
Pakistan

Dr. M. Hussain Mahmood Mann
GC University, Faisalabad,
Pakistan

Dr. Aamir Zeb Shaikh
NED UET, Karachi,
Pakistan

Dr. Muhammad Adil Ansari
QUEST, Larkana,
Pakistan

Dr. Sohail Khokhar
QUEST, Nawabshah,
Pakistan

Dr. Ehsan Ahmed Buriro
QUEST, Larkana,
Pakistan

Dr. Abdul Karim Shah
Dawood UET, Karachi,
Pakistan

Dr. Mohsin Shaikh
QUEST, Larkana,
Pakistan

Dr. Nazar Hussain Phulpoto
QUEST, Nawabshah,
Pakistan

Dr. Zahidullah
CECOS University of IT and ES,
Peshawar, Pakistan

Dr. Syed Kamran Sami
BUIITEMS, Quetta,
Pakistan

Dr. Muhammad Yousef
Gomal University, D. I. Khan,
Pakistan

Dr. Tehseen Jawaaid
AERC, University of Karachi,
Karachi, Pakistan

Dr. . Syeda Maria Zaidi
Balochistan UET, Khuzdar,
Pakistan



EDITORIAL REVIEWER BOARD

Dr. Osama Yousaf ababneh
Zarqa University, Zarqa,
Jordan

Dr. Muhammad Adil Ansari
QUEST, Larkana,
Pakistan

Dr. Hazlina Binti Hamdan
Universiti Putra Malaysia,
Serdang, Malaysia

Dr. Imdadullah Thaheem
DGIST, Daegu,
South Korea

Dr. Muhammad Adil Zehri
P&D, Balochistan,
Pakistan

Dr. Imran Ali
Datacom (pvt) Ltd,
Australia

Dr. Emrah Evren kara
Düzce University, Düzce,
Turkey

Dr. Ahmet Ocak
Ađry Ýbrahim Çeçen University,
Ađry, Turkey

Dr. Ali Kashif Bashir
University of Faroe Islands,
Tórshavn, Faroe Island

Dr. Safdar Hussain Bouk
DGIST, Daegu,
South Korea

Dr. Ajaz Bashir Janjua
HMC, Taxila,
Pakistan

Dr. Usman Azhar
BUIEMS, Quetta,
Pakistan

Dr. Faisal Ahmed
CEME NUST, Islamabad,
Pakistan

Dr. Tipu Sultan
University of M&T, Lahore,
Pakistan

Dr. Gul Agha
Illinois University Urbana Champaign,
Ili, USA

Dr. Hafeez-ur-Rehman Memon
Balochistan UET, Khuzdar,
Pakistan

Dr. Safeeullah Soomro
AMA International University,
Salamabad, Bahrain

Dr. Syed Zahoor Ul Haque
Caledonian College of Engineering,
Muscat, Oman

Dr. Javed Ali
Caledonian College of Engineering,
Muscat, Oman

Dr. Din Muhammad
University of Wollongong,
Wollongong, Australia

Dr. Dileep Kumar
University of Suwan, Suwon,
South Korea

Dr. Nawab Faseeh Qureshi
Sungkyunkwan university, Seoul,
South Korea

Dr. Onur Saldır
Van Yüzüncü Yıl University, Van,
Turkey

Dr. Muhammad Arsalan Shehzad
Georgia Institute of Technology,
Atlanta, USA

Dr. Syed Chattan Shah
Hankuk University of Foreign Studies,
Seoul, South Korea

Dr. Muhammad Asim
University of Karachi, Karachi,
Pakistan

Dr. M. Hussain Mahmood Mann
GC University, Faisalabad,
Pakistan

Dr. Aamir Zeb Shaikh
NED UET, Karachi,
Pakistan



Dr. Abdul Majeed
P&D, Balochistan,
Pakistan

Dr. Feroz Ahmed Soomro
QUEST, Larkana,
Pakistan

Dr. Shafiullah Soomro
QUEST, Larkana,
Pakistan

Dr. Imtaiz Ahmed Halepoto
QUEST, Nawabshah,
Pakistan

Dr. Aziz Ahmed Memon
Sukkur IBA University,
Sukkur, Pakistan

Dr. Muhammad Asim
Sukkur IBA University,
Sukkur, Pakistan

Dr. Saqib Siddiquie
BUIITEMS, Quetta,
Pakistan

Dr. Irfan Ali Bacho
Mehran UET, Jamshoro,
Pakistan

Dr. Aftab Hameed Memon
QUEST, Nawabshah,
Pakistan

Dr. Tehseen Jawaid
AERC, University of Karachi,
Pakistan

Dr. Muhammad Zahid
Dawood UET, Karachi,
Pakistan

Dr. Ghulamullah Kakar
BUIITEMS, Quetta,
Pakistan

Dr. Abdul Qudoos
Balochistan UET, Khuzdar,
Pakistan

Dr. Syed Saad Azhar
PETRONAS (UTP),
Perk, Malaysia

Dr. Sohail Khokhar
QUEST, Nawabshah,
Pakistan

Dr. Ehsan Ahmed Buriro
QUEST, Larkana,
Pakistan

Dr. Abdul Karim shah
Dawood UET, Karachi,
Pakistan

Dr. Mohsin Shaikh
QUEST, Larkana,
Pakistan

Dr. Nazar Hussain Phulpoto
QUEST, Nawabshah,
Pakistan

Dr. Saeed Ahmed Abro
Sukkur IBA University, Sukkur,
Pakistan

Dr. Syed Kamran Sami
BUIITEMS, Quetta,
Pakistan

Dr. Muhammad Ali Abro
Mehran UET, Khairpur Mir's,
Pakistan

Dr. Muhammad Yousef
Gomal University, D.I. Khan,
Pakistan

Dr. Ghazala Nawaz
Kohat University of S&T, Kohat,
Pakistan

Dr. Zahidullah
CECOS University of IT and ES,
Pakistan

Dr. Abdul Malik Tareen
University of Loralai, Loralai,
Pakistan

SECRETARY BJEAS

Engr. Farhan Ahmed Magsi



TABLE OF CONTENTS

Volume 4

No. 1

June 2021

1. **Mathematical Model to Determine the Repeat Size of Fabric Weave Design**.....1
Shah Rukh Shahbaz, Zohaib Fazal, Zafar Javed, Usman Javed, Syed Zameer Ul Hassan, Ali Asghar, Anila Ali, Faisal Mushtaq, Ali Raza Shafqat
2. **Review on Transducing Mechanism of Biosensors for POC Diagnosis**.....6
Ayesha Shaukat, Rahila Umer
3. **Inhibition Efficacy of Electrodeposited Zinc Composite Coating Formulated with ZnO, CeO₂ and MoS₂ Nanoparticles on Mild Steel**.....13
Filza Naz, Mukesh Kumar, Umair Aftab, M. Ishaque Abro
4. **Government Size and Economic Performance: How Substantial are linkages in the Case of Pakistan?**.....19
Usman Azhar, Zeeshan Inam, Bilal Sarwar, Noor Muhammad, Rukia Magsi
5. **The Dilemma of Child Labor: A Case of Pakistan's Football Manufacturing Industry Sialkot**.....24
Hadi Hassan Khan, Bilal Sarwar, Noor Muhammad, S.M. Nabeel Ul Haq, Rukia Magsi
6. **Microstructural Investigation of Nanosphere Lithography Fabricated Gold Nano-patterns using Polystyrene Monolayers**.....32
Naveed Ullah, Asim Ahmad Riaz, Sajjad Ahmad, Muhammad Naeem Khan, Syed Shaukat Ali Shah, Waseem Akram
7. **Assessment of Thermal Behaviour of Coal and Bio-char Solids**37
Ramli Mat, Faisal Mushtaq, Fawad Israr, Muhammad Sheharyar, Asadullah, Syed Haseeb Sultan, Syed Zameer Ul Hassan, Zamir Ahmed Abro, Ali Asghar, Anila Ali
8. **An Evaluation of Peaks and Troughs in OSS Projects**.....43
Bakhtiar Khan Kasi, Mumraiz Kasi, Muhammad Akram Khan, Kamran Sami, Zahid Rauf
9. **Drivers and Barriers of Hydropower generation in Pakistan. SWOT Investigation with RII Analysis**.....49
Sikander Ali Abbasi, Khanji Harijan, Irfan Ahmed Abbasi, Ayaz Hussain, Faheemullah Shaikh, Zubair Ahmed Memon



- 10. A State-of-the-art Review on Discrete Optimization-based Approaches for Multi-hop Wireless Local Area Networks58**
Muhammad Bux, Hamayoun Shahwani, Syed Attique Shah, Raja Asif Wagan, Zahid Rauf
- 11. Development of FBG-based Sensor Manufactured by FDM Technology to Monitor Pressure Changes65**
Chengyu Hong, Zamir Ahmed Abro, Abdul Malik Rehan Abbasi, Faisal Mushtaq, Zafarullah Abro, Syed Zameer Ul Hassan
- 12. Estimation of Earthquake Damages and Loses in Pakistan: A Statistical Approach.....69**
Muhammad Javed Shahid, Ghulam Murtaza, Abdul Raziq
- 13. Sindhi Parts of Speech Tagging Using Neural Networks.....77**
Adnan Ali, Abdul Samad, Sikandar khan, Muhammad Imran
- 14. Modeling Uncertainty to Estimate Economic Impacts of Electric Power Outages on Marble Industry.....83**
Muhammad Kaleem Ullah Khalil, Rehman Akhtar, Sajjad Ahmad, Qazi Muhammad Yaseen, Asim Ahmad Riaz, Waseem Akram
- 15. Extent of Corporate Social Responsibility Disclosures in Pakistan's Food Industry.....91**
Maheen Javed, Noor Muhammad, Bilal Sarwar, Muhammad Irfan, Hadi Hassan Khan, Muhammad Habib
- 16. Solar Energy Prospects in Pakistan. Challenges and Opportunities.....105**
Sikander Ali Abbasi, Khanji Harijan, Irfan Ahmed Abbasi, Ayaz Hussain, Faheemullah Shaikh, Zubair Ahmed Memon