

# Newsletter

## DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING FALL 2018



COMSATS University Islamabad, Lahore Campus was established in January 2002. It is located at Defence Road off Raiwind Road Lahore. In a city of learning like Lahore, the campus caters for the ever-increasing demands of students in the fields of



Computer Science, Electrical and Computer Engineering, Chemical Engineering, Architecture, Psychology, and Management Science.

The mission of the Electrical and Computer Engineering (ECE) department is to prepare competent electrical engineering and computer engineering graduates conscious of professional ethical and social responsibilities for productive engineering careers in industry academia and research both locally and abroad. The department's aim is to get recognized globally as one of the leading departments of engineering education.

6.4 MILLION  
GRANT  
APPROVED FOR  
RESEARCH

### LIST OF EVENTS

- Departmental Seminars/Workshops
- Seminars/Workshops by Dr. Shahid Mumtaz
- Departmental CPD Activities
- Visit of CGS Sectt Team to Lahore Campus
- Other Departmental Activities
- China visit for project planning
- Project Planning
- Departmental research Activities
- A Three Week Fun Learning Experience
- Student week
- Research Activities
- Faculty Rejoining



The department prides itself for offering the most advanced facilities to its students. The department not only strives for the best educational atmosphere for its students, but also supports a constant and continuous effort to enhance and upgrade department facilities.

# DEPARTMENTAL SEMINARS/WORKSHOPS

## PAK-CHINA BUSINESS FORUM

Dr. Saleem Akhtar, Head-ECE and Dr. Ejaz A. Ansari, Associate Head-ECE attended the opening ceremony of Pak-China Business Forum and Industrial Expo (PCBF-IE) 2018 along with Faculty members on Friday, 14 th September, 2018 at Expo Center Lahore.

## OCCUPATIONAL HEALTH, SECURITY AND SAFETY

The Safety Committee of ECE Department conducted a lecture/training session on “Occupational Health, Security and Safety” with collaboration of Chemical Engineering Department, wherein Col. (R) Shahzad Anwar, Security In-charge of CUI Lahore Campus delivered a lecture on the topic. The nominated faculty and staff members of ECE department attended this valuable session.

## ENVIRONMENT AND SUSTAINABILITY

Collaboration and Outreach Committee (COC) of ECE Department conducted a Workshop on “*Environment and Sustainability*” in collaboration with Department of Chemistry on Wednesday, 12th December, 2018 for attainment of Non-Engineering PLO's.

## ENGINEERING ETHICS

Collaboration and Outreach Committee (COC) of ECE Department conducted another Workshop on “*Engineering Ethics*” in collaboration with Department of Humanities on Friday, 14th December, 2018 for attainment of Non-Engineering PLO's.

## CAREER COUNSELLING

Graduating students of ECE Department attended the seminar on Wednesday, 5th December, 2018 on the areas of Self-Grooming for the job, How to land between the Interviewers expectations and Motivational Speech (how to make better choices in the career and what to expect from the Job market).

## NANOCMOS: PROCESS AND DESIGN FOR BETTER DIGITAL BRAIN

Student of ECE Department attended an invited talk on “Nano CMOS: Process and design for Better Digital Brain” delivered by Prof. Ibrahim Bin Ahmad, University Research and Development Center (URND), Univeisti Tenaga Nasional Putrajaya Campus, Malaysia on Monday, 5 th November, 2018.

## (WIE)SIGHT CONGRESS

Students of ECE Department participated in IEEE [Pakistan Student/Young Professionals (YP)/Women in Engineering (WIE)/Special Interest Group on Humanitarian Technology (SIGHT) Congress] on 17 th and 18 th November, 2018. Wherein IEEE-Students Branch of CUI Lahore Campus won best Ambassador Award by Mr. Najaf Ali and Best Student Branch Leadership Award by Mr. Muhammad Irtaza.

## IOT-KNOWLEDGE SHARING FOR STARTUPS

The Collaboration and Outreach Committee (COC) of ECE Department conducted a session on “IOT-Knowledge Sharing for Startups” on Thursday, 22 nd November, 2018 with collaboration of Netsol Technologies Incorporation

**BUSINESS INTELLIGENCE AND DATA SCIENCE**

CUI-IET Student Branch Lahore Campus conducted a workshop on “*Business Intelligence and Data Science*” on Monday, 17th December, 2018.

**CAREER STRATEGIES**

Collaboration and Outreach Committee of ECE Department held 03 days workshops on “*Career Strategies i.e. CV Writing and Interview Skills*” for attainment of Non-Engineering PLO’s. in collaboration with Department of Humanities

**FRONTIERS OF INFORMATION TECHNOLOGY (FIT)**

Nominated Faculty and Students of graduate program attended the *16th International Conference on Frontiers of Information Technology (FIT-2018)* on Monday-Wednesday, 17th to 19th December, 2018.





# SEMINARS/WORKSHOPS

## DR. SHAHID MUMTAZ

Department of Electrical and Computer Engineering (ECE) held a series of workshop/seminars and short courses from Monday, 26th November to Thursday, 6th December, 2018. Dr. Shahid Mumtaz, Principal Research Scientist and Technical Manager at Instituto de Telecomunicações (IT) Portugal conducted various seminars/workshops/courses on following topics :

- Seminar 1: 5G Standardization, New Radio and Next Generation Core (NGC)- 3GPP Release 15-16.
- Seminar 2: Ultra Reliable and Low latency Communication (URLCC) for 5G, IoT, Time Sensitive networking and communication.
- Workshop 1: 4G-LTE - RF Engineering, Air Interface, and Core Network.
- Workshop 2: LTE to 5G: Vision, Requirement, Technical Challenges and Technologies for 6G.
- Workshop 3: Machine learning, Block Chain, Big Data.
- Crash course on Wireless communication for Undergraduate Student.
- Potential Ph.D. and Master thesis discussion with the graduate student.
- Course 1: Antenna design, Beamforming, Precoding, Massive MIMO, mmWave/THz. Communication, and System Modelling.
- Course 2: Network Sharing, Network Slicing, NVE, SDN, Edge computing, and Caching.
- Course 3: Dynamic Spectrum Management: spectrum sharing. LTE-U/LAA, WiFi-LTE aggregation, Multefire, Satellite, terrestrial spectrum sharing.



# DEPARTMENTAL CPD ACTIVITIES

## CPD # 1 4G, LTE AND EVOLUTION TO 5G MOBILE COMMUNICATION

Continuing Professional Development (CPD) committee of ECE Department conducted a two days seminar on “4G, LTE and Evolution to 5G Mobile Communication” on Tuesday

Wednesday, 4 th and 5 th December, 2018. Wherein certificates containing 0.5 CPD points were awarded to the participants. Main contents covered in CPD were:



- 5G Standardization, New Radio and Next Generation Core (NGC)- 3GPP Release 15-16.
- Ultra Reliable and Low latency Communication (URLCC) for 5G, IoT, Time Sensitive

networking and communication.

- 4G-LTE - RF Engineering, Air Interface, and Core Network.
- LTE to 5G: Vision, Requirement, Technical Challenges and Technologies for 6G.
- Machine learning, Block Chain, Big Data.

## CPD # 2 PLC, HMI, SCADA

The main objective of the one day CPD activity was introduction to Industrial Automation. The main content of the seminar included understanding of the techniques and tools which includes Programmable logic controllers (PLCs), Human Machine Interface and supervisory control and data acquisition (SCADA). The targeted participants included Engineers working in Industry, undergraduate and postgraduate students and faculty members. Wherein certificates containing 0.5 CPD points were awarded to the participants.

Continuing Professional Development (CPD)

Committee of ECE Department held the seminars on following topics for final year students (7th and 8th semesters) of undergraduate programs of ECE Department:

## CPD # 3 SEMINAR SERIES

- o “*Entrepreneurship*” held on Monday, 24th December 2018
- o “*Corporate Law*” held on Wednesday, 26th December 2018
- o “*Marketing of IT and Telecom Products*” held on Wednesday, 26th December 2018



# VISIT OF CGS SECTT TEAM TO LAHORE CAMPUS

In order to establish productive academic Industry collaboration the CGS secretariat team visited CUI Lahore campus. Various meetings were held on 20th July, 2018 in the offices of Worthy Director, Head Academics and Research, IRCBM conference room and HoD Chemical Engineering to look for the rooms of collaboration. Following were the participants and discussed points:

CGS Team:

Name	Designation	Responsibility
Mr. Amjad Ali	Brigadier	ITD, CGS Secretariat GHQ,RWP
Mr. Muhammad Hammad	Colonel	ITD, CGS Secretariat GHQ,RWP
Mr. Zafar Iqbal	Senior Research Officer	ITD, CGS Secretariat GHQ,RWP

CUI Team:

Name	Designation	Responsibility
Dr. Asad Ullah Khan	Professor	HoD/InCharge ChE, CUI Lahore
Dr. Muhammad Abid	Professor	Director, IRCME, CUI Wah Campus
Dr. Zulfiqar Ali	Associate Professor	In-charge polymer processing and Rubber Technology Labs, CUI Lahore Campus

Inspection and Technical Directorate (ITD) CGS team was welcomed in the Director Office by Worthy Director, HoD Chemical Engineering Lahore Campus and Director Interdisciplinary Research Center. The

Worthy Director briefed the team about R & D potential of CUI in general and Lahore Campus specifically.

- A meeting was held in the IRCBM conference room where HoDs of different departments presented the potential of their respective departments. Different possibilities of the academic industry collaboration was also discussed.
- The ITD, CGS team visited all the departments and was quite impressed and showed interest to collaborate in the fields of artificial intelligence, high energy weapon and tissue engineering.
- During the discussion, it was observed that there are some areas where Department of Chemical Engineering and ITD can have a productive collaboration. The potential areas are as under:
  - Development of standards for the various military products.
  - Reverse engineering of different polymer and rubber products used in the armed vehicles.
  - Facilitate Defence Production vendors to upgrade their products
- ITD official proposed that CUI Lahore campus team should visit ITD GHQ Rawalpindi to strengthen and broaden the scope of collaboration in the field of polymer and rubber technology.
- ITD, CGS team officials proposed to visit HIT Taxila to collaborate, which CUI Lahore campus team has already visited.
- It was also decided that Dr. Abid will discuss the modalities to collaborate with ITD communicated to CUI Lahore Campus team.



# OTHER DEPARTMENTAL ACTIVITIES

## LAB DEVELOPMENT

Department of Electrical and Computer Engineering (ECE) established Digital Logic Design (DLD) Lab for its undergraduate programs, worthy Director, CUI Lahore Campus Prof. Dr. Qaisar Abbas inaugurated the DLD Lab on Friday, 14th December, 2018. Wherein prayers were offered for the success of Institute and Department as well.

## TREE PLANTATION ACTIVITY

CUI-IEEE Student Branch Lahore Campus held a ceremony for IEEE-CUI Branch Tree Plantation campaign on Friday, 14th December, 2018. Prof. Dr. Qaisar Abbas, worthy Director, CUI Lahore Campus, Dr. Saleem Akhtar, Head-ECE, Dr. Ejaz A. Ansari, Associate Head-ECE and Dr. Sobia Baig, Associate Professor-ECE/Counselor CUI-IEEE Student Branch Lahore graced the occasion and planted the trees at CUI Lahore Campus.

## INDUSTRIAL VISIT

Students of Bachelors of Computer Engineering visited the Mangla Power Station on Saturday, 22nd December, 2018 under the supervision of Mr. Usman Rafique, Assistant Professor ECE. Students were briefed in detail about the technical specifications of the power station, its history and its role in the national grid of electrical power. Junior Engineer Mr. Qaiser briefed about the working of turbines, their electrical parameters and different aspects of load demand and supply in summer and



# PROJECT TRAINING

## FAWAD AZEEM AND MUHAMMAD ZUBAIR

Mr. Fawad Azeem and Muhammad Zubair, from COMSATS University Islamabad, Lahore Campus, Electrical Engineering Department visited Power Engineering Lab of South China University of Technology, on 14th November to 12th December 2018, to participate in a training on jointly funded project of National Science Foundation of China and Pakistan Science Foundation.

The purpose of the visit is to do collaborative research and training on the project "Implementation and Testing of the Micro grid in Rural Communities with Maximum Penetration of Renewable Energy Resources in Pakistan. The project

dispatch and unit commitment. c) Voltage and Frequency regulation. d) Reactive power compensation e) SCADA system and communication. Muhammad Zubair was working on voltage and frequency regulation of the isolated micro-grid.

In the first two weeks the Chinese research team shared the data and tutorial exercises with Muhammad Zubair to have expertise on the Power Factory tool. The tutorial exercises were based on how to design a grid model in DIGSILENT /Power Factory, calculate the load flow analysis and analyzing behavior of grid under different scenarios. After learning the basics of DIGSILENT /Power Factory the Chinese research team cooperated with Muhammad Zubair to build a basic micro-grid model using different renewable energy resources along with the energy storage elements.

The Chinese research team has also arranged a visit for Mr. Fawad Azeem and Muhammad Zubair to the head office of South China Power Grid.

During their visit the Chinese research team and team from Pakistan was briefed on the power infrastructure of South China Power Grid. They were also briefed on the latest drone

technology they are using for the maintenance of their transmission lines.

The Chinese team arranged a visit for the Pakistani team members to the Electric Vehicle display center. The Chinese team also arranged a visit for team members from Pakistan to their Micro-grid lab and briefed them about their micro-grid lab facility.

The two sides worked closely together within four weeks and completed the scheduled research work, laying a solid foundation for the next research work of the project. After the training and research, both members expressed great gains.

THE PROJECT TITLE WAS "IMPLEMENTATION AND TESTING OF MICRO GRID IN RURAL COMMUNITIES WITH MAXIMUM PENETRATION OF RENEWABLE ENERGY RESOURCES IN PAKISTAN."

research is divided into five subcategories. The details of the research problem are: a) Modeling of the electrical system by using software like MATLAB, PSCAD/EMTDC and DIGSILENT/Power Factory. b) Load forecasting and Energy Dispatch using techniques like Economic





# CHINA VISIT FOR PROJECT PLANNING

**DR. MUHAMMAD YAQOOB JAVED**

Dr. Muhammad Yaqoob Javed from COMSATS University Islamabad, Lahore Campus, Electrical and Computer Engineering Department visited Power Engineering Lab of South China University of Technology, on 30th July to 19th August 2018, to participate in a jointly funded project of National Science Foundation of China and Pakistan Science Foundation. In order to ensure the progress of the project, China and Pakistan revised the itinerary after consultation

**THE PROJECT TITLE WAS "IMPLEMENTATION AND TESTING OF MICRO GRID IN RURAL COMMUNITIES WITH MAXIMUM PENETRATION OF RENEWABLE ENERGY RESOURCES IN PAKISTAN."**

with Professor Guan Lin, the person in charge of the power system operation analysis and planning team of the School of Electric Power, and more than 20 teachers and students of the project team gave up the summer holiday break and participated in the project discussion and Training work.

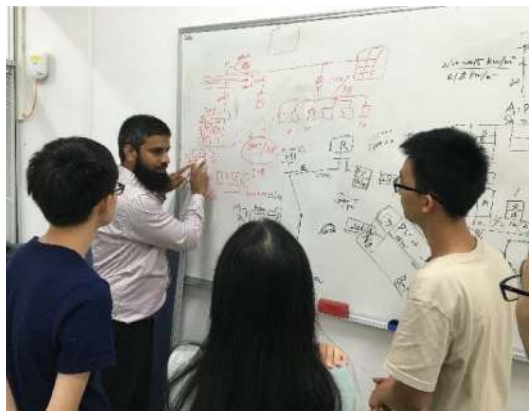
Initially, Dr. Yaqoob gave a detailed presentation on Pakistan electrical power system statistics to all the Chinese project team members. Then, they finalized



their research site for the microgrid construction in a rural community of Pakistan. In Pakistan, the electrical power system is divided into four types of electrical load i.e. industrial, commercial, residential and agricultural.

The research problem is divided into five subcategories. The details of the research problem are a) Modeling of the electrical system by using software like MATLAB, PSCAD/EMTDC, and DIGISILENT/PowerFactory. b) load forecasting and Energy Dispatch using techniques like Economic dispatch and unit commitment, c) Voltage and Frequency regulation, d) reactive power compensation

and e) SCADA system and communication. Subsequently, a four-day simulation software training for Dr. Yaqoob is conducted by two group of Chinese research team and cooperated with the DIGSILENT and PSCAD/EMTDC simulation platforms to build the microgrid model. Finally, they arranged a visit to their microgrid lab and gave a detailed presentation on the available microgrid facility. In order to develop a similar kind of microgrid lab in COMSATS Lahore. The two sides worked closely together within three weeks and completed the scheduled research work, laying a solid foundation for the next research work.





# A THREE WEEK FUN LEARNING EXPERIENCE

## DR. MUJTABA JAFFERY

The main learning modules includes Personal Effectiveness, Brain Trainin, Hands on Programming, Science

Madness, Social responsibility, Fun in the field Visual Arts. Facebook page link:

<https://www.facebook.com/evolvelearninghub18/>

### Faculty and Mentors:

- 1. Abdul Rauf - ACA.**  
Director Bifringence Private Limited.
- 2. Dr. Muhammad Ashfaq Ahmed**  
Head of Department, Physics, CUI.
- 3. Yaseen Ahmed Meenai**  
Trainer & IBA Faculty Member.
- 4. Dr. Adnan Zahid**  
Co-founder Johnny & Jugnu and LUMS Faculty Member.
- 5. Tooba Ahmad**  
Certified Trainer and Language Specialist.
- 6. Dr. Muneeba Shakeel**  
Clinical Psychologist and Certified Hypnotherapist.
- 7. Dr. Mujtaba Jaffery**  
Robotics Specialist & CUI Faculty Member.
- 8. Dr. Wajahat Mahmood Qazi**  
Artificial Intelligence Expert and CUI Faculty Member



# LEARNING MODULES

Commutatively the learning modules include Communication skills, Public speaking, Hypnosis-Optimal learning, Stress management, Knowing yourself, Creative writing, Zumba/yoga, Brain exercises, Mathematics, Creativity and innovation, Coding, Artificial intelligence, Scratch-Game designing, MS office & prezi, Quantum and modern physics, Nano technology, Astronomy, Light matter reflection, Electronics, Roboics, Enviroment sustainability, Ecosystem, Test your muscles, Industry visit, Guided tour, First aid training, Graphic Designing and Photography

# STUDENT WEEK ACTIVITIES

The main events includes

- Gaming Storm
- Think Sherlock
- Technohunt
- Quiz of Thrones
- Finger Painting
- Players unknown battle grounds

AN INTELLIGENTLY  
DESIGNED STUDENT  
WEEK FOR STUDENTS  
RECREATION



## ACTIVITIES DETAIL

University life is strenuous and undoubtedly would take its toll on the well-being of the students if the routine was ever continuous and strenuous. To give the students a break from the nerve wracking routine, CUI plans a Students Week every semester. What better time to place this recreation than just after the exam session of the first sessional exams? It is a very nice refresher after the arduous exam procedures. Similarly this semester the Students Week was celebrated in the same manner.



# ACTIVITIES DETAIL

The Students Week commenced on Friday, 19 th October 2018 at 1130AM. Unfortunately due to the lack of time for preparations as the exams had just ended, no event was held that day. The members of WIE were ever determined to make each event look eye catching as they had all their forces dedicated towards decorations. The efforts of Ms. Bakhtawar Ijaz(Chairperson WIE-ICLSB) and Mr. Mohammad Irtaza(Chairperson ICLSB) to keep everything in order cannot be ignored, undoubtedly it's their supervision and dedication towards the society that has kept it on track throughout the events.

# RESEARCH ACTIVITIES

1. A research paper of Dr. Muhammad Jawad and Dr. Mujtaba Hussain Jaffery, Assistant Professors; Mr. Subhan Khan and Mr. Muhammad Umair Safder, Lecturers and Mr. Salman Javid, Lab Engineer titled "Analysis of the Satellite Navigational Data in the Baseband Signal Processing of Galileo E5 Altboc Signal" published in ARCTIC Journal, with Impact Factor: 1.022.
2. A research paper of Dr. Muhammad Yaqoob Javed and Dr. Mujtaba Hussain Jaffery, Assistant Professors; Mr. Subhan Khan and Muhammad Umair Safder, Lecturers and Mr. Noman Naeem, Lab Engineer titled "Learning Outcome-Based Teaching of Power Electronics and Electric Machines Hybrid Laboratory Using Abal Method" accepted in ARCTIC Journal, with Impact Factor: 1.022.
3. A journal research paper of Dr. Imran Ghous, Assistant Professor "Fault detection Observer design for 2-D continuous nonlinear systems with finite frequency specifications", has been published in ISA Transactions, with Impact Factor: 3.370.
4. A journal research paper of Dr. Mirza Tariq Hamayun, Assistant professor titled "LPV Modeling and Tracking Control of Dissimilar Redundant Actuation System for Civil Aircraft" accepted for publication in the International Journal of Control, Automation and Systems with IF 2.2.
5. A journal research paper of Dr. Mirza Tariq Hamayun, Assistant professor titled "Active Fault Tolerant Control Scheme for Aircraft with Dissimilar Redundant Actuation System subject to Hydraulic Failure" accepted for publication in Journal of the Franklin Institute.

## AUGUST 27TH

Dr. Saleem Akhtar, Head-ECE visited the University Putra Malaysia (UPM) on Monday-Friday, 27th to 31st August, 2018 along-with CUI delegation for CUI-UPM research collaboration.

## NOVEMBER 29TH

A delegation from North China Electric Power University (NCEPU) visited the Labs of ECE Department under the leadership of Associate Prof. Qi Zheng, Vice-Dean of International Education.

## DECEMBER 7TH

Dr. M. Yaqoob Javed and Mian Ahmed Yaser, Assistant Professors of ECE Department visited Descon Technical Institute (DTI) for collaboration to conduct the CPD activities on PLC, HMI and SCADA etc.

# FACULTY REJOINING



## DR. KHURRAM ZAIDI

**Degree:** PhD.

**Institute:** University Technology Petronas, Malaysia

**Specialization:** Wireless Communication

**Degree:** MS

**Institute:** University of Leicester, UK

**Specialization:** Information & Communication Engineering

**Degree:** BS

**Institute:** UET, Lahore

**Specialization:** Electrical Engineering



## DR. ARSLAN KHAN

**Degree:** PhD.

**Institute:** Kumoh National Institute of Technology, South Korea

**Specialization:** Wireless Communication

**Degree:** MS

**Institute:** CUI Lahore

**Specialization:** Electrical Engineering

**Degree:** BS

**Institute:** CUI Lahore

**Specialization:** Electrical Engineering



Convener: Dr. Yaqoob Javed

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# NEWSLETTER COMMITTEE