Dean ORIC Message

Capital University of Science & Technology (CUST) Islamabad is a progressive academic institution determined to produce competent professionals, who could be instrumental in the development of a prosperous society. The core objective of ORIC at CUST is to provide strategic and operational support to the university research activities, strengthen academia-industry linkages and promote entrepreneurship, technology-transfer and commercialization activities. ORIC has responsibility of guaranteeing that all the research programs and policies reflect the core values of academic freedom, professional integrity, ethical conduct and full compliance with all policies, legal requirements and operational standards of the university.

We believe in continual skill development of our students to satisfactorily

equip them with modern tools and technical skills set vital for the industry. A number of joint ventures are being done with industry through mutual collaborations. To showcase our recent progress report, the ORIC Newsletter Fall-2021 is in your hands. This Newsletter entails the contribution of ORIC towards its explicated domains i.e., Research Operations, Technology Incubation & Innovation and Industrial Liaison. It is comforting to see that ORIC is playing its leading role in facilitating university's research outcomes, Technology Transfer and Commercialization activities. The Office of Research, Innovation and Commercialization has done great work in compiling this Newsletter of great value and is committed to unfold its prolific endeavor to the next level.

Prof. Dr. Aamer Iqbal Bhatti
PhD, MSc, DIC, SM IEEE

CUST ORIC Drive under the Guidelines of HEC

As technologies have grown more sophisticated and emerging industries have become more high-tech, universities have become more important players in the processes of invention, innovation, and commercialization. To make research a top priority for a sustainable future knowledge economy and link research and commercialization from the University with emerging and existing firms across Pakistan, Higher Education Commission (HEC) has initiated to establish Office of Research, Innovation and Commercialization (ORIC) across universities. HEC has assigned ORIC to facilitate university research operations, develop mechanisms for research commercialization and work diligently for innovation and entrepreneurship. In accordance with HEC recommendations regarding essential wings, ORIC at CUST performs under three major domains namely Research Operations, Technology Incubation and Innovation and Industrial Liaison.

HEC has made ORICs responsible for research fund raising and provision of information to faculty about various available research grants. ORIC at CUST is setting pace to match up the challenges in the field of Research through promoting and enhancing cross-cutting and multi-disciplinary research initiatives, diversifying external research funding and improving translation of research into the public benefit. ORIC plays its prospective role to reward faculty and researchers through Research Honorarium and assisting them to acquire research grants from various funding agencies. Capacity building is the topmost precedence of HEC. ORIC guarantee that technical workshops, seminars and business plan competitions are conducted on continual basis so that students remain well equipped with modern tools and skills vital for the industry and corporate world.

HEC wants ORIC in each university to work on research commercialization and help startups to incubate, create new jobs, products and services. ORIC at CUST has worked on establishment of CUST Incubation Center and facilitation of Startups to inculcate the culture of commercialization and entrepreneurship. "Tech Flickers", "Aquaponic", "Remote Content Management System", "Amazon Virtual Assistant Based Trading", "Tissue Culture Lab" and "Flex Tracker" are recent examples of some of the startups facilitated/founded by ORIC. We have awarded an amount worth 510,000 PKR to 17 projects over a period of 2 years that have sound marketing potential and commercialization aptitude. ORIC at CUST has maintained a comprehensive Research Database regarding Publications, R&D Projects, Donors/Funding Agencies and Industrial links in concurrence with HEC requirements.

HEC has mandated ORIC to create effective outreach with industry and commercial sector. In pursuit of academia-industry linkage MOUs and mutual agreements are signed with various national/international organizations. A number of ventures are done with industry through mutual collaborations and joint projects. Industrial visits are being organized on continual basis. HEC ORIC Evaluation Matrix has due share for University's Research/Innovation/Commercialization Policies. Keeping in view its significance ORIC has developed University's Research, Training and Incubation Policies. ORIC is playing its potential role in facilitating university's research culture, promoting entrepreneurship, technology-transfer and commercialization, and strengthening university-industry relationships in accordance with HEC guiding principles.

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PSF Inter-University Competition to Develop Low-cost Waste Recycling Machine/Solution

The Mechanical Engineering Department, CUST won Project under Pakistan Science Foundation (PSF) Inter-University Competition to Develop Low-cost Waste Recycling Machine/Solution. The title of the project was "Development of Plastic Tile Production Machine". Dr. Salman Sagheer Warsi Assistant Professor, ME Department was the supervisor of the project. An amount worth 0.61 million PKR was granted by PSF.

CUST Faculty won Funding Grants under HEC NRPU Programme

National Research Program for Universities (NRPU) is a flagship Research Program of HEC for funding research grants on competitive merit for high-level and promising scientific projects that demonstrate strategic relevance and impact to local industry and society. The faculty researchers of CUST have submitted numerous proposals on diverse and innovative research projects/ideas in NRPU. CUST faculty has recently won three projects worth 24.4 PKR million under NRPU program as detailed in Table 1.

Sr. No.	Title	Principal Investigator (PI/Co PI)	Department	Budget (PKR)
1	Development Of Building Products from Recycled-Plastic for Housing	Prof. Majid Ali	Civil Engineering	9.982 million
2	eHealth supported intervention for improving care for young people with substance use disorder in Pakistan	Dr. Ishrat Yousaf	Management Sciences	7.318 million
3	Screening of benzimidazole derivatives as potential agents for diabetic neuropathy and associated pathological mediators	Dr. Muzaffar Abbas	Pharmacy	7.10 million

Table 1: List of Research Projects won by CUST Faculty under HEC NRPU-2021
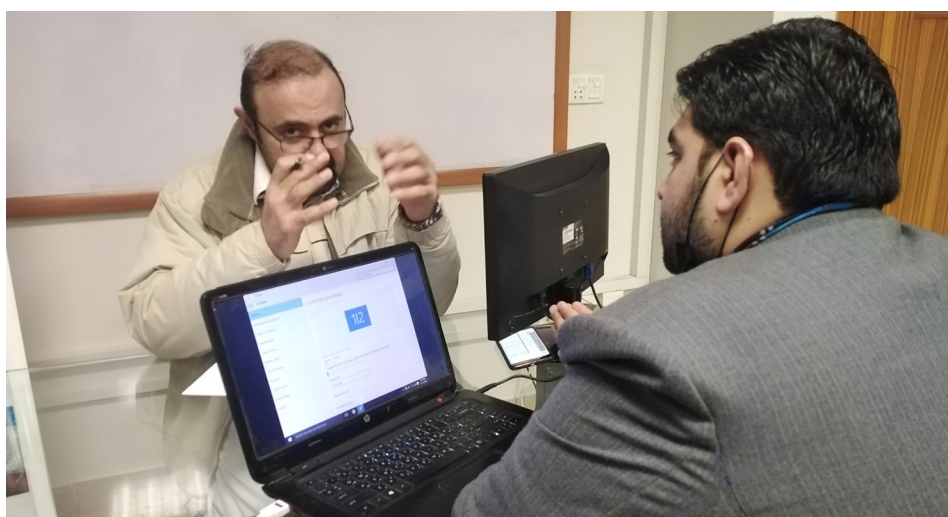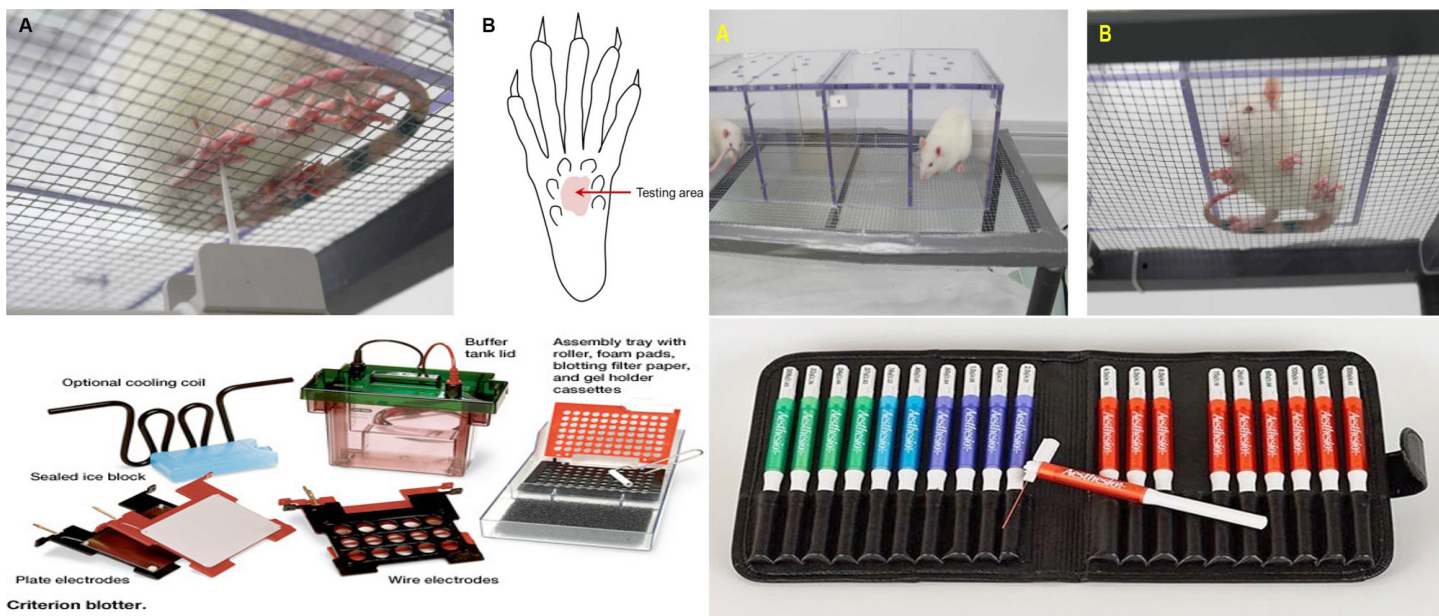
CUST Incubation Center

Office of Research Innovation and Commercialization (ORIC) under the mentorship of Vice Chancellor initiated the concept of incubation Center at CUST. The purpose was to help CUST students and alumni initiate new startups and develop their business by providing facilities like workspace, high speed internet, mentoring, and training. ORIC is also providing technical and legal documentation support to these startups to get registered at Securities & Exchange Commission of Pakistan (SECP).

ORIC Inaugural Startups Cohort Launch for Incubation Center

The CUST Incubation Center (CIC) started accepting applications for its Inaugural Cohort: A pitching competition to hunt for startups on November 19, 2021. A total of 11 startup applications were received and scrutinized to dig out potential applications. The initial screening was based on the practicality of the ideas presented, and qualification/experience of teams. The shortlisted startups presented their ideas before CUST Innovation Committee. The committee members unanimously agreed and selected the top two startups to be inducted at the CIC namely "Aquaponics" and "Remote Content Management System".

Success Stories of Tech Flickers - CUST first SECP Registered Company

Tech Flickers, a software-based platform is the first SECP incubated company that helps passionate people and businesses make an impact by providing them various quality services like Web Development, App Development, Graphics Designing, Content Writing, Digital Marketing etc. Tech Flickers started with 2 members, and now have a team of 6 members. The clients are mainly from European countries and US. The company recently signed an

MOU with a renowned foreign IT company and a number of local software houses are in loop for collaboration. The company has developed a new product that will benefit sellers working on amazon & eBay. The main product's benefits include reduction in day-to-day manual hardworking activities to check price changing and stock changing status from websites they are getting products from. The software will help workers save 4-6 hours of daily work and save human mistakes. The product is already sold to one of the clients in UK.

Tech Flickers is also selling digital products like software, tools and courses to clients all around the world and taking commissions from providers.

Walzona

Walzona Ltd is a Registered Limited company of Tech Flickers in UK which

sells furniture and apparel products in UK and US markets. Walzona have products from UK-registered retailers and whole sellers, and deliver custom-designed apparel products from print-on-demand companies. It has joined hands with sellers and retailers to sell their products through registered channel. Until now the company has sold products worth 700 pound.

Students' Internship at CUST Incubation Center

Capital University of Science and Technology (CUST), Islamabad in this fast-changing world stands ready to meet the challenges of training pro-

fessionals regarding modern tools and technical set of skills required for the industry and improving economic and social well-being of the country. Establishment of CUST Incubation Center (CIC) showcases the efforts of CUST towards commercialization and Innovation.

ORIC initiated internships for students at CIC to learn them hands-on technical/freelancing skills. In its first batch a total of 06 students were graduated from CIC after successful completion of their internships.

Commercialization of Tissue Culture Plants-Success Stories

Tissue culture techniques have become a substitute tool for vegetative propagation of plants. As an emergent technology, the micro-propagation of plants has influenced greatly both agriculture and industry by making sure the provision of plants and to encounter the ever-growing world demands. ORIC in collaboration with Department of Bioinformatics and Biosciences initiated the project of commercialization and enhancing the production capacity of banana through tissue culture techniques. The project was conducted under the supervision of HoD Biosciences, Dr. Sahar Fazal along with Dr. Erum Dilshad, Assistant Professor Biosciences Department and Dr. Arshia Amin Butt, Assistant Professor Biosciences Department. The

potential buyers for the tissue cultured plants were identified and contacted by ORIC. The project team successfully acclimatized and sold out around 200 banana plants to New Punjab Nursery Farm located Islamabad for accumulative amount of 27000 PKR.

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ORIC Innovation Committee-Inaugural Meet-Up Sessions

Tissue culture techniques have become aCUST Innovation Committee was con-

stituted with the aim to make commercialization of the developed products/prototypes possible and achieve on ground success. The committee has active participation from each Department. In Fall 2021 two meet ups of the committee are held to discuss and proceed toward commercialization of products/prototypes.

Seminar on Amazon Trading

Recent hype in E-commerce has made the world realize the concrete and actual scope of online markets. Considering the importance of online business, Capital University of Science and Technology (CUST) partnered with Checkout US to conduct training and provide mentorship to students for easy earnings. In this regard, Office of Research, Innovation and commercialization in collaboration with Checkout US conducted an awareness session on Amazon Trading on 28th October, 2021. The participants were briefed about the course designed for students and how it will help them clarify their concepts and concerns regarding E-Commerce business and walk out with a clear vision and rock-solid roadmap towards an enlightened career path. They were also briefed on learning the right skills and securing their internships and even guaranteed placement upon successful completion of the Training.

Series of Hands-On Crash Courses on Amazon Web Service (AWS)

Amazon Web Services (AWS) offers a broad set of global cloud-based products including Compute, Storage, Da-

tabases, Analytics, Networking, Mobile, Developer Tools, Enterprise applications etc. From Data Warehousing to Deployment Tools, Directories to Content Delivery, over 175 AWS services are available. Considering the significance of Amazon Computing in today's digital world, ORIC started the series of short courses on AWS. The two-week hands-on course on "AWS" was held on 11th to 20th October 2021.

The third hands-on course on "Amazon Web Services (AWS)" was held from 20th to 31st December 2021. The concluding ceremony held on 05th January 2022 was graced by HoD CS, Prof. Nayyer Masood and Dean Research & Innovation, Prof. Aamer Iqbal Bhat-

ti. The ceremony concluded with acknowledging remarks, and significance of AWS/Cloud Computing and relevant certifications by Prof. Nayyer Masood. The objective of these course was to provide participants with essential AWS skills to upscale their job chances, help in preparation of fundamental AWS Certification and enable them to work as freelancer.

PhD Alumni Get-Together of Faculty of Computing, Faculty of Management & Social Sciences and Faculty of Health & Life Sciences

The PhD Alumni Get-Together of Faculty of Computing (FoC), Faculty of Management & Social Sciences (FMSS) and Faculty of Health & Life Sciences (FHLS) was held on 2nd November 2021 by the Office of Research, Innovation and Commercialization (ORIC). The ceremony was graced by honorable Vice Chancellor, CUST, Prof. Dr. Muhammad Mansoor Ahmed. Dean Research & Innovation, Dean Faculty of Management & Social Sciences, HoD Computer Science, HoD Software Engineering, HoD Mathematics and HoD Management Sciences were also present at the occasion. The event started with the inaugural speech of Vice Chancellor CUST followed by welcome note of Dean Research & Innovation.

In his address Vice Chancellor welcomed and acknowledged the participants for visiting CUST. Following welcome notes, the alumni representative

Dr. Khurram Shahzad (Dean Faculty of Management Sciences, Riphah International University, Islamabad) paid tribute to CUST faculty and administration on behalf of PhD Alumni. This was followed by alumni cards distribu-

tion and high tea refreshment. The Vice Chancellor appreciated the endeavors and professional growth of alumni and ensured to arrange such meetups on continual basis.

Hands-on Training Session on Ethical Hacking and Information Security

Ethical Hacking is an act of intruding/ penetrating into system or networks to find out threats, vulnerabilities in those systems which a malicious attacker may find and exploit causing loss of data, financial loss or other major damages. The purpose of ethical hacking is to improve the security of the network or systems by fixing the vulnerabilities found during testing. ORIC in collaboration with Department of Computed Science conducted two weeks' comprehensive workshop on Ethical Hacking. The purpose of the session was to equip students with the art of preventing data from being stolen and misused by malicious attackers

In this course, participants were provided hands on experience about the ethical hacking. Various hacking tools and hacking technologies were demonstrated during the training. The resource person for the said course was Mr. Amer Zaheer, Lecturer Department of Computer science. Dean Research &

Innovation and Dean ELIC graced the closing ceremony of the course in which

the participants were awarded course completion certificates.

Checkout US- Crash Course on Amazon Trading

Office of Research Innovation & commercialization in collaboration with Checkout US conducted a six weeks long comprehensive course on Amazon Trading. The session was conducted by resource persons from Checkout US and consisted of a total 08 Modules which were covered in six weeks from 5th Nov, 2021 to 14th Jan, 2022. Check-

out US has been indulged in consulting business for more than 12 years. They offer a wide range of profitable business opportunities and has also established online assets in the field of E-commerce. Dean Research & Innovation and HoD Management Sciences graced the closing ceremony of the course in which the participants were awarded course completion certificates. Checkout US, also offered internships to Mr. Ammar Yasir and Mr. Shahmeer (Course participants) based upon their excellent performance throughout the course. Dean

Research & Innovation concluded the session by word of thanks to the audience and the resource persons.

Interactive Session on "Digital Literacy for Youth to Control the Negative Effects of Social Media"

Research found that a lack of digital literacy can easily cause the negative effects of social media, including addiction and anti-social behavior among adolescences. Considering the importance of digital literacy Office of Research Innovation and Commercialization (ORIC) in collaboration with Departments of Phycology and Pharmacy organized a training session for CUST students. The session was conducted by Musheer under the project on digital literacy for youth to control the negative effect of social media, especially in their career choice. The project is supported by the U.S. Mission to Pakistan in Partnership with the Pakistan-U.S. Alumni Network. The session focused on Process to identify the fake and Authentic information, using social media positively and ethically and Toolkit to plan your career progressively.

React JS Front End JavaScript Library" for Web Developers

React JS can be used for creating large web applications for organizations in an agile manner. Through React, data can dynamically get updated in web pages without requiring them to be reloaded at

each update trigger. The prominent web products like Facebook and Instagram are built on its basis, and there is over 10, 274, 456 live websites that use React. Office of Research, Innovation and Commercialization (ORIC) conducted Forty Hours hands-on course on "Re-

act" starting from 1st November 2021. The objective of course was to provide participants with hands-on knowledge about React JS and its application in web development.

The participants included students from CUST and Dr. A. Q. Khan Institute of Computer Science and Technology (KICSIT). The concluding ceremony held on 05th January 2022 was graced by HoD CS, Prof. Nayyer Masood and Dean Research & Innovation, Prof. Aamer Iqbal Bhatti. The proved to be a great source of knowledge to participants.

Short Course on "Ubuntu and Python"

Python is a high-level and general-purpose dynamic programming language ranked among the fastest-growing languages in the world being powerful, flexible, and easy-to-use. It is used in many organizations as it supports multiple programming paradigms and also performs automatic memory manage-

ment. Office of Research, Innovation and Commercialization (ORIC) organized One Week Hands-on Course on "Ubuntu and Python" starting from 22nd November 2021. The purpose of the course was to equip participants with the applied knowledge about Ubuntu and Python with practical illustrations.

The participants also included personnel from National Center for Physics (NCP). The course ended with acknowledging remarks, and significance of Python certifications by Dean Research & Innovation. He also appreciated the efforts of ORIC for conducting the course.

Innovations Dashboard

Innovation is the introduction of a good or service that is new or has significantly improved characteristics or intended uses. Office of Research, Innovation and Commercialization (ORIC) plays a central role in facilitating university's research outcomes and Technology Incubation & Innovation activities. ORIC has worked to establish a culture of innovation and commercialization through entrepreneurship within the departments. The dashboard depicted in Table 3 displays the innovation endeavors of ORIC with various departments.

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Innovation Dashboard

EE	Pharm	BS	CS
Vaccum Robot	Moringa Capsules	Tissue Culture	Hostel4u
ME	EE	CS	CE
Electric Rickshaw	LED Projector Light	Amazon Virtual Assistant Based Trading	Shake Table

Eighteenth (18th) ORIC Research Committee Meeting

The 18th ORIC Research Committee Meeting chaired by Dean Research & Innovation was held on 21st October, 2021. The meetings mainly discussed PhD Research Excellence Framework, PhD Core Competencies and Evaluation Rubrics practiced worldwide. A working document in this regard proposed by ORIC was shared with members.