

His Excellency, Lyonpo Ugyen Dorji, Minister of Home and Cultural Affairs interacting with the STEM Camp participants during the inauguration of 2nd Winter STEM Camp on 10th January 2023 at Jigme Namgyel Engineering College, Dewathang.

IN THIS ISSUE

Page 2

Capacity Enhancement in Electrical Equipment Condition Monitoring and Fault Diagnostics

Page 3

International Webinar on Emerging Digital Technology in Engineering and Management

Page 3

Highlights of Achievement July 2022 – June 2023

Page 4

Professional Development on Teaching Learning Process for College Academics

Page 5

A Journey of Learning and Discovery

Page 6

6th Faculty Research Seminar Meet

STEM Program covers 447 Students in 10 Schools

Sangay Chedup

Jigme Namgyel Engineering College (JNEC), in collaboration with UNICEF-Bhutan and IEEE Pre-University STEM Portal conducted STEM Outreach programme for 10 schools in Samdrup Jongkhar and Pemagatshel districts. The programme titled “Grassroot STEM Education Outreach Programme” involved organising a 4-5 days STEM camp aimed at benefiting rural youths in two districts.

During the camp, students were introduced to two essential STEM learning tools: Arduino Microcontroller and STEMSEL (Science Technology Engineering Maths Social Enterprise Learning) runline controller. These tools enabled rural youths to grasp the broader scope of STEM studies, empowering them to ideate, design, and implement basic applications on their own through hands-on experiences. Students were engaged in learning hands-on by interfacing hardware components and software programming in enhancing their understanding and discovering creativity by developing basic applications on automation, the Internet of Things (IoT), robotics and drone controls. These approaches allowed them to unlock their creativity and develop design-thinking abilities leading to the creation of real-life applications inspired by emerging technologies.

The primary objective of the programme was to encourage and enhance the enrollment of rural

youth in STEM fields of study. The programme aimed to:

- Provide underprivileged rural youth access to STEM learning tools.
- Empower girls by prioritizing equal participation and motivating them to take STEM as a choice of study.
- Bridge the digital divide by narrowing the gap between urban and rural youth.

The programme successfully reached 447 students from 10 schools, consisting of 211 females and 236 males. The participants were from classes 7 to 12. Additionally, 13 STEM teachers attended the programme along with their students in their respective schools.

To ensure the sustainability of STEM learning in schools the programme donated STEM learning tools to the participating schools. This is to ensure that schools initiate STEM clubs and create a platform to continue their hands-on learning experiences.

Many students expressed their appreciation and learnt that such programmes have positively influenced them to take up STEM subjects. Mr. Gayley, STEM teacher at Orong Higher Secondary School shared, “I had a completely different perception about the programme but it turned out to be most interesting and fulfilling.”. While Mr. Prem Prasad from Nangkor Central School learnt the significance of using these tools in STEM education. Furthermore, Nima Yangchen Dolker, a girl student and her colleagues from Samdrup Jongkhar Higher Secondary School pledged to continue and explore further

particularly the emerging technologies inspired by STEM subjects.

The prospect of such initiatives in transforming the perception of youths on STEM studies was analysed from the response of students before and after the programme. Their response also enabled us to determine the long-term objectives of such programmes which shall be incorporated into future initiatives. Considering the necessity and the prospect of grassroots impact through this programme, UNICEF-Bhutan has committed to continue their support in soliciting fund for the future programmes.



Capacity Enhancement in Electrical Equipment Condition Monitoring and Fault Diagnostics

International Relation

Jigme Namgyel Engineering College, Royal University of Bhutan (JNEC-RUB) is one of the beneficiary partners of the Erasmus+ CBHE Project (Capacity Enhancement in Electrical Equipment Condition Monitoring and Fault Diagnostics (CEECoM)) along with two other partner from Europe and Nepal. This three-year joint project co-funded by the Erasmus+ programme of the European Union had a kick-off meeting from 13th to 15th February 2023 at Aalto University, Finland.

During the meet the partner universities had a kick off workshop, laboratory and industry visit of CEECoM. The three days event oriented the participants with project objectives, deliverables, activities timeline and work package leader. From JNEC-RUB, three-members led by Mr. Hemlal Bhattarai, Asst. Professor, project manager of CEECoM, Mr. Sangay Chedup, Dean Research of Industrial Linkages (DRIL) and Mr. Karma Singye,

Laboratory Technician attended the event and presented their work packages.

As a part of this project the college will conduct a need assessment from utility companies and stakeholders to understand the current situation of electrical equipment in power sectors. Further the project will also develop a curriculum, training resources and set up a laboratory in the domain of condition monitoring and fault

detection. Similar activities will also be carried out by partner universities from Nepal. This project also plans to frame a curriculum and enhance the capacity building of students and staff.

The college would like to acknowledge Aalto University for the overall coordination of the project and also the European Union for funding this excellent and timely project.



Strengthening Capacity of Higher Engineering Education for Sustainable Buildings (HEESeB) funded by APPEAR Academic Partnership, Austria

Jigme Namgyel Engineering College is being awarded with APPEAR (Austrian Partnership Programme in Higher Education and Research for Development) project titled 'Strengthening Capacity of Higher Engineering Education for Sustainable Buildings (HEESeB)' in its ninth call for Academic Partnership with Innsbruck University (UIBK), Austria.

APPEAR is a programme of the Austrian Development Cooperation (ADC) with an aim to implement its strategy in supporting higher education and research for development on an academic institutional level in the ADC's priority countries. This is the first time the college is coordinating this bilateral project. The project will be implemented between February 2023 to February 2026.

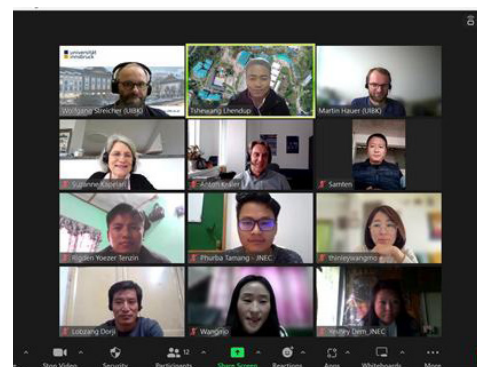
This project has two key objectives:

- To develop a new academic programme on timber engineering for energy efficient buildings leading to an award of "Certificate in Timber Engineering for Energy Efficient Buildings" including advanced timber engineering laboratory;
- To develop two new courses at JNEC:

Gender, equity and diversity sensitive science, technology, engineering and mathematics (STEM); Building modelling and simulation, and HVAC;

The kick-off meeting was held virtually on 23rd February which was attended by all project working members. This further details on the project can be found on the HEESeB website.

<https://www.heeseb.com/>



HOME ABOUT US EVENTS PROJECT MEMBERS DOWNLOADS LINKS CONTACT US LOGIN



Strengthening Capacity of Higher Engineering Education for Sustainable Buildings (HEESeB)

Jigme Namgyel Engineering College in collaboration with Innsbruck University, Austria has been awarded APPEAR (Austrian Partnership Programme in Higher Education and Research for Development) project in its ninth call for Academic partnership. APPEAR is a programme of the Austrian Development Cooperation (ADC) with the aim to implement its strategy for support of higher education and research for development on an academic institutional level in the ADC's priority countries and key regions European Union Grant (Erasmus+) for a project titled "Strengthening problem-based learning in South Asian Universities" (PBL South Asia). The project is being coordinated by JNEC.

Partners: Jigme Namgyel Engineering College (JNEC-RUB), Royal University of Bhutan, BHUTAN and University of Innsbruck (UIBK), AUSTRIA

Project Duration: 1st February 2023 – 31st January 2026

International Webinar on Emerging Digital Technology in Engineering and Management

Sangay Chedup

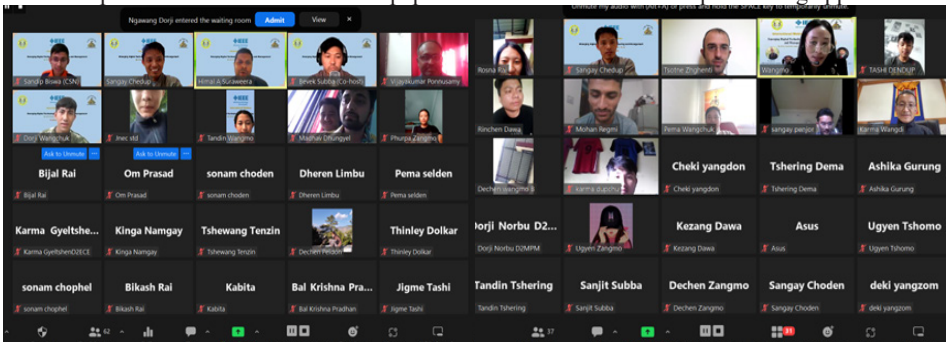
The multidisciplinary international webinar was organised by Jigme Namgyel Engineering College on 15th October, 2022 under the banner of IEEE Region 10 Subsection Bhutan. This webinar was a part of knowledge sharing on the best research practices with international participants.

Workshop/
Seminar

The webinar composed of speakers with Business and management, digital economy, ICT, Electronics and Communication Engineering, Power and Electrical Engineering, and Mechanical Engineering background. Two eminent speakers Dr. Ferry Jie, Professor at Edith Cowan University, Australia and Professor Tsotne Zhghenti of Business and Technology University, Georgia shared the significance of emerging ICT technologies in supply chain management and digital economy, respectively. Apart from faculty and students, the session was also attended by procurement officers from the Royal Government of Bhutan.

The session on ICT, Electronics and Communication Engineering, Power and Electrical Engineering, and Mechanical Engineering section had three speakers. Dr. Dushantha Nalin K. Jayakody, a professor at the Lusofona University, Portugal gave insights on the research methods, and shared

common platforms to write research papers. communications and positioning applications.



Dr. Himal S.A. Suraweera, Senior Lecturer at the University of Peradeniya, Sri Lanka shared insights on applications of machine learning (ML) techniques for visible light

Finally, Dr. Vijayakumar Ponnusamy, Professor at the SRM Institute of Science and Technology, India shared on the integration of emerging technologies in IR 4.0.

JNEC - Highlights of Achievement July 2022 – June 2023 (in number)

Research and
Project Proposals
Submitted

12

Research and
Project Grants
Received

7

Staff Exchange
and Capacity
Building with
European
Universities

31

Student Exchange
Program with
EU and Japan
Universities

43

New Linkages
Established
(national &
international)

8

Graduates
Employed
on Campus
Recruitment.

48

Professional Development on Teaching Learning Process for College Academics

The spring semester 2023 must have been a great start for all academics since they were refreshed with teaching learning pedagogies. A 5-day Professional Development course on teaching learning was conducted from 30th January to 3rd February 2023.

The training was facilitated by two senior academics from Samtse College of Education: Mr. Karma Gayphel (Lecturer) and Mr. Tshering Dorji (Lecturer).

A total of 40 academics from all departments attended the session. The session covered the challenges and opportunities in higher education, introduced with creative learning approaches such as inquiry based learning, cooperative learning and related strategies. It also covered educational assessments, effective questioning techniques and handling student's responses. The practical sessions provided a platform for academics to implement the above mentioned approaches in their teachings.

International
Relation



‘Never stop learning: Knowledge doubles every fourteen months’

Anthony J. D'Angelo

JNEC Observes Druk Tshongrig Gatoen

Druk Tshongrig Gatoen - Bhutan's first festival to promote entrepreneurship and intelligent business was held on 22nd October 2022 organised by JNEC-Entrepreneurship and Innovation Center financially supported by Loden Foundation. It is 3 day long festival of thinking, learning, sharing and networking with the aim to encourage entrepreneur culture. Druk Tshongrig Gatoen (Intelligent business) is an avenue for young minds to inculcate entrepreneurial skills and to recognise the nation's entrepreneurial and startup community.

JNEC-Entrepreneurship and Innovation Centre marked this festival with three main events, namely the Loden impact video, an online webinar by Dr. Jigme Wangchuk, General Manager of Koufuku International Ltd where he shared on "Taking Action towards Sustainable Rural-Urban Linkages through Dairy Value Chain Intervention" and an address by two entrepreneurs Ms. Dawa Zangmo (Loden Entrepreneur) and Ms. Ratna Kumari Ghalley (Incubatee of JNEC) who are the Loden entrepreneurs and incubatee of JNEC, respectively.

Through this programme the center aspires the attendees to use the knowledge and information gathered during this event. Further the center also acknowledges the organisers and sponsors for their valuable efforts.



A Journey of Learning and Discovery

Christian Rissler, Lund University

Dewathang, Bhutan – As an exchange student from Lund University in Sweden, my journey to Bhutan and my time at Jigme Namgyel Engineering College (JNEC) have been truly extraordinary. What started as a mission to complete my master's thesis on optimizing the performance of a low-cost solar food dryer has evolved into an unforgettable adventure filled with friendship and cultural immersion.

From the moment I arrived in Bhutan, I was embraced by the vibrant and welcoming community at JNEC. The faculty, staff, and fellow students made me feel at home, ensuring a seamless transition into this new environment. The unwavering support and encouragement I received from my academic supervisors and classmates were invaluable, instilling in me the confidence and motivation to pursue both my thesis and the experiences that awaited me.

Conducting my thesis on analyzing and optimizing a low-cost solar food dryer specifically designed for rural areas in the Himalayas has been a profoundly enlightening experience. I had the privilege of visiting local communities, gaining invaluable insights into their daily lives, challenges, and aspirations. Witnessing the profound impact that sustainable technology could have on rural livelihoods was truly inspiring. The resilience and resourcefulness of the Bhutanese people in adapting to their environmental and geographical conditions left an indelible impression on me.

“As my journey in Bhutan comes to a temporary close, I am filled with an overwhelming sense of gratitude and wonder. This remarkable country has left an indelible mark on my heart, and I am certain that one day I will return to further explore its hidden treasures.”

Beyond the academic sphere, Bhutan offered me an abundance of enriching experiences. Exploring the picturesque landscapes of the Himalayas, I was constantly awestruck by the breathtaking beauty that surrounded me. From snow-capped peaks to lush valleys and pristine rivers, Bhutan's natural wonders and diverse climates deepened my appreciation for the magnificence of the natural world.

Immersing myself in Bhutanese culture has been an absolute pleasure. The warm and hospitable friends I made here introduced me to their traditions, language, and

cuisine. Although initially challenged by the spiciness of Bhutanese cuisine, every meal became an adventure, an opportunity to explore the diverse culinary flavors of Bhutan. I quickly developed a fondness for delicacies such as Ema Datshi, Momos, and Suja. Additionally, I was fortunate to partake in the time-honored sport of traditional archery, a cherished symbol of Bhutanese heritage.

No account of my time in Bhutan would be complete without mentioning the spiritual and cultural aspects that make this country truly unique. The profound Buddhist philosophy, evident in the serene temples and monasteries scattered throughout the land, left an everlasting impression on my mind and soul. Witnessing the vibrant religious ceremonies and festivals added a vibrant tapestry of colors and traditions to my experience, offering me a glimpse into the rich cultural heritage of Bhutan.

As my journey in Bhutan comes to a temporary close, I am filled with an overwhelming

sense of gratitude and wonder. This remarkable country has left an indelible mark on my heart, and I am certain that one day I will return to further explore its hidden treasures. The land of the thunder dragon, with its

pristine beauty, genuine hospitality, and rich cultural heritage, has become a second home to me.

To my friends at JNEC, I extend my deepest gratitude for the warmth and support you have shown me throughout my stay. Your kindness and friendship have made my time here truly unforgettable. To the people of Bhutan, I say "kadrinchhey la" for opening your hearts and embracing me as one of your own. The memories I have created and the lessons I have learned will forever shape my perspective on life and the world around me.

In conclusion, my journey in Bhutan and at JNEC has been a transformative experience, one that extends far beyond the realms of academia. I leave with a profound appreciation for the natural beauty, cultural richness, and the incredible people who call this country home.



Training on Basic Computing and Office Productivity Tools

One of the key aspirations for the college is to be resourceful for the community and the nation. Therefore the college conducts numerous community services to benefit the locality. In line to this, on 16th till 20th January 2023, the college conducted 5 day training on Basic Computing and Office Productivity Tools for school students.

A total of 32 students from various schools benefited from the training and they were awarded certificates of participation by the President of the college. He shared on the importance of acquiring and enhancing Information Technology (IT) and digital skills

in this competitive world.

During the five days of training, the participants were taught the basics of Microsoft Windows Operating system and computer hardware. In addition, the students were also trained on using MS Office and composing emails. This training was jointly organized by the Department of Information and Technology (DIT) and IT Service Unit (ITSU) of the college.



6th Faculty Research Seminar Meet

Sangay Chedup

The 6th Annual Faculty Research Seminar was held on October 19, 2022 in Jigme Namgyel Engineering College. The seminar is an annual event organized by College

*Workshop/
Seminar*

Research Committee to create a platform for academics to present their research findings.

The seminar had seven speakers with six different backgrounds. Dr. Tadachika Nakayama, Professor at the Nagaoka University of Technology, Japan delivered a keynote speech on IoT & Robotic Applications in Smart Agriculture. 6th faculty research seminar had the privilege of hosting it under the banner of IEEE Region 10 Subsection Bhutan. Mr. Sonam Gyeltshen, Lecturer in Humanities and Management shared his work on mathematical modeling on “Estimation of control reproduction number for novel coronavirus in Bhutan: a modeling approach”.

Mr. Srijana Gajmer, Associate Lecturer in Department of Electronics and Communication Engineering shared her research work on “Study in reduction of healthcare discrepancies resulting from inadequate biomedical data using deep transfer learning”.

Mr. Christian Rissler, shared his ongoing research on “Deriving a mathematical model of a solar dryer from experimental data”. Mr. Christian is a master student at Lund University, Sweden. He is carrying out his thesis on solar dryers at Jigme Namgyel Engineering College, Bhutan as part of a joint EU project.

Mr. Choten Tshering, Associate Lecturer, Department of Civil Engineering and Surveying shared his research outcome on “Life Cycle cost analysis of two storied residential building”.

Mr. Aita Bdr. Subba, Adjunct Faculty in Department of Electrical Engineering delivered on “Feasibility of solar thermal and solar PV integrated with building

facade, case study in Thimphu” and Mr. Karchung, Associate Lecturer in Department of Electrical Engineering shared on his ongoing project “GHG and SLCP reduction potential of 1 TPD biogas plant at JNEC”.

Dr. Tshewang Lhendup, the President of the College advised the faculty and students to emphasise research in applied engineering, thereby prioritizing in solving the local problems through the technology interventions.



IEEE
Advancing Technology
for Humanity

6th Faculty Seminar
on
Engineering, Technology and Management
Knowledge Sharing — Making the Difference
October 19, 2022

Keynote Speaker
Dr. Tadachika Nakayama
Nagaoka University of Technology, Japan

Sonam Gyeltshen
Lecturer

Aita Bdr. Subba
Assistant Lecturer

Srijana Gajmer
Associate Lecturer

Christian Rissler
Lund University, Sweden

Choten Tshering
Associate Lecturer

Karchung
Associate Lecturer

Jigme Namgyel Engineering College
Royal University of Bhutan

MEMBERS OF PUBLICATION UNIT

Adviser: Mr. Sangay Chedup, Dean of Research & Industrial Linkages

Coordinator: Mr. Ngawang Chojay, Asst. Research Officer

Editors : Mr. Namgay Dorji, Lecturer, DHM

Mr. Parashuram Sharma, Asst. Professor, DEE

Mr. Younten Tshering, Lecturer, DIT

Mr. Phurba Tamang, Associate Lecturer, DCES

Ms. Thinley Wangmo, Associate Lecturer, DHM

Designer: Mr. Sonam Jamtsho, Dy. Chief ICT Officer, ITSU

Contact:

ngawangchojay.jnec@rub.edu.bt;

Fax: 00975-07-260289, (<http://www.jnec.edu.bt>)