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International Professional Exchange Program

Entitled

" Biomedical Equipment Technology- An Associate Degree" For Kabul University of Medical Sciences

Organized by

DEPARTMENT OF BIOMEDICAL ENGINEERING
NETAJI SUBHASH ENGINEERING COLLEGE
(A UNIT OF TIG)
TECHNO CITY, GARIA, KOLKATA, INDIA

Sponsored By

USAID,US

Participating Institutes: University of Massachusetts , US ,Kabul University of Medical Science & Kabul Polytechnic University, Afghanistan, NSEC India.

Duration: 16th September-29th September,2018

Venue: APC Hall, NSEC, Kolkata , India

Community Colleges of Spokane

INTERNATIONAL PROFESSIONAL EXCHANGE PROGRAM
ON
BIOMEDICAL EQUIPMENT TECHNOLOGY (BMET) ASSOCIATE DEGREE

September 16-29, 2018

Dr. H.K.Mandal, Director, Patron
Prof. A.K.Ghosh, Principal, Chairman
Prof. T. K. Datta, Dean, Advisor
Prof. P.K.Banerjee, Advisor
Prof. S. Roy, HOD- BME, Coordinator
Mr. S.K.Samanta,BME,NSEC - Convener
Mr. I. Kundu –Technical Advisor
Dr.S.K.Ghosh, BME-NSEC
Mr. T.Das, BME-NSEC
Ms. S. Chatterjee, BME- NSEC
Mr. A. Maiti, BME-NSEC

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BMET

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ORGANISED BY
DEPARTMENT OF BIOMEDICAL ENGINEERING
NETAJI SUBHASH ENGINEERING COLLEGE, Techno City Garia, Kolkata - 700152

SUPPORTED BY

The University of Massachusetts at Amherst, as part of the USAID-funded University Support and Workforce Development

INTERNATIONAL PROFESSIONAL EXCHANGE PROGRAM
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BMET

Netaji Subhash Engineering College

The college was set up keeping in mind the ideals of Netaji Subhash Chandra Bose, whose contribution to Indian Freedom Movement remains invaluable forever. Netaji had dreamt of a vibrant, strong and powerful India, an India that would be independent and self- reliant, not only politically but also in the spheres of education and technology. He believed that true independence could stem only from a strong base in education and technology.

Netaji Subhash Engineering College, under Techno India Group, is one of the leading institutes in West Bengal. The college is located in the rural background of South 24 Parganas near Garia Station and has a sprawling area with green scenario making it a premier abode of learning. Aiming for excellence, the college trains and produces competent engineers with the knowledge of science and technology in engineering and management to encounter future challenges.

Biomedical Engineering Department

Netaji Subhash Engineering College has introduced 4-year graduate course (B.Tech) in Bio-Medical Engineering for the first time in the Eastern region of India. The course curriculum is based on Electronics Engineering with special emphasis on instrumentation, computer Science, digital signal processing and image processing in the field of medical science. The department was established with a view to imparting quality technical education by striving hard for continuous development and improvement in learning with excellent infrastructural facilities to produce proven technocrats. The B.Tech program is accredited by

About Kolkata

Kolkata, formerly Calcutta, city, capital of West Bengal state, and former capital (1772–1911) of British India. It is one of India's largest cities and one of its major ports. The city is centered on the east bank of the Hugli (Hooghly) River, once the main channel of the Ganges (Ganga) River, about 96 miles (154 km) upstream from the head of the Bay of Bengal; there the port city developed as a point of transshipment from water to land and from river to sea. A city of commerce, transport, and manufacture, Kolkata is the dominant urban center of eastern India and a geographical gateway to southeast Asia.

Fashioned by the colonial British in the manner of a grand European capital—yet now set in one of the poorest and most overpopulated regions of India—Kolkata has grown into a city of sharp contrasts and contradictions. Kolkata has had to assimilate strong European influences and overcome the limitations of its colonial legacy in order to find its own unique identity. In the process, it created an amalgam of East and West that found its expression in the life and works of the 19th-century Bengali elite and its most noteworthy figure, the Nobel Laureate poet and mystic Rabindranath Tagore

International Professional Exchange

The Biomedical Equipment Technology (BMET) training program is a part of a greater initiative for the University of Massachusetts, Amherst which has a partnership to support the implementation of BMET Associate Degree

This training program is designed to help university professionals effectively manage the growth of tertiary education while improving academic quality. Faculty and staff members from Kabul University of Medical Sciences and Kabul Polytechnic University will participate in the program.

Objectives

(1) To provide the participants with applied experience in managing and operating a Digital Electronics Laboratory for BMET faculty including familiarization with lab experiment construction, evaluation, and troubleshooting.

(2) To provide the participants with applied experience and train them to enhance their knowledge of basic biomedical devices. This will include device identification, patient application (how the patient benefits from the use of the device), environment of use (where in the clinical environment will the device be found), device operation, and evaluation of device performance.

(3) To provide the participants with an applied experience to develop standards, mechanisms, processes for overall management and implementation of BMET Community College so they would eventually take the lead and ownership of the program.

Venue

APC Roy Conference Hall, Netaji Subhash Engineering College (NSEC), TECHNO CITY

INTERNATIONAL PROFESSIONAL EXCHANGE PROGRAM ON "BIOMEDICAL EQUIPMENT TECHNOLOGY (BMET) ASSOCIATE DEGREE"

ORGANIZED BY

DEPARTMENT OF BIOMEDICAL ENGINEERING
NETAJI SUBHASH ENGINEERING COLLEGE,KOLKATA,INDIA

SEPTEMBER 16, 2018 TO SEPTEMBER 29,2018

PROGRAM SCHEDULE

DAY 1, September 16, 2018 **VENUE:** APC Roy Hall, Netaji Subhash Engineering College		
09:30-09:35	Welcome Address	Dr. Hrishikesh Mandal, Director, NSEC
09:35-09:40	Introduction to workshop	Dr. Sukumar Roy, Prof. & HOD, BME & Coordinator-BMET 2018
09:40-09:45	Address by	Prof. (Dr.) Amal K Ghosh, Principal, NSEC
09:45-09:50	Address by	Dr. Arindam Roy, Director, TIG
09:50-10:00	Opening Remarks	Hassan Aslami, Senior Manager of Associate Degrees, USDWP
10:00-10:10	Orientation & Detailed Overview	Larry McNeese, CCS
10:10-10:25	Introduction of Participants & Trainers	
10:25-10:30	Vote of thanks	Mr. Sujan Krishna Samanta, Asstt. Prof., BME & Convener-BMET 2018
GROUP PHOTO SESSION		
10:35-10:45	Registration	
10:45-11:15	**TEA BREAK**	
11:15-13:00	Introduction to Biomedical Equipment Technology (BMET) – An overview	Mr. Susovan Dasgupta
13:00-14:00	**LUNCH AND PRAYER BREAK**	
14:00-15:15	Introduction to the electrocardiogram (ECG) machine	Mr. Ishan Kundu
15:15-15:30	**TEA BREAK**	
15:30-17:00	Hands-on laboratory to operate, evaluate, and troubleshoot an electrocardiogram (ECG) machine	Mr. Ishan Kundu

DAY 2, September 17, 2018 **VENUE:** Project Lab-ECE Deptt., Netaji Subhash Engineering College		
09:30-10:45	❖ Introduction to the IDL 800A-R digital circuitry laboratory trainer ❖ Hands-on laboratory using the IDL 800A-R to verify digital component operation	Mr. Anupam Maiti, Mr. Tapas Kr. Dawn
10:45-11.00	**TEA BREAK**	
11:00-13:30	Hands-on laboratory using the IDL 800A-R equipment to verify digital gate operation	Mr. Anupam Maiti Mr. Tapas Kr. Dawn

13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-16:00	Hands-on laboratory using the IDL 800A-R equipment to construct and evaluate the operation of a digital counter circuit	Mr. Anupam Maiti Mr. Tapas Kr. Dawn
16:00-16:15	**TEA BREAK**	
16:15-17:30	Hands-on laboratory using the IDL 800A-R equipment to construct and evaluate the operation of a digital counter circuit	Mr. Anupam Maiti Mr. Tapas Kr. Dawn

DAY 3, September 18, 2018 **VENUE:** Project Lab-ECE Deptt., Netaji Subhash Engineering College		
09:30-10:45	Introduction to digital memory	Mr. Anupam Maiti Mr. Tapas Kr. Dawn,
10:45-11.00	**TEA BREAK**	
11:00-13:30	Hands-on laboratory using the IDL 800A-R equipment to construct and evaluate the operation of a digital memory circuit.	Mr. Anupam Maiti Mr. Tapas Kr. Dawn
13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-16:00	Hands-on laboratory using the IDL 800A-R equipment to construct a digital circuit using a schematic drawing of a circuit.	Mr. Anupam Maiti Mr. Tapas Kr. Dawn
16:00-16:15	**TEA & SNACKS DURING THE SESSION**	
16:15-17:30	Hands-on laboratory using the IDL 800A-R equipment, logic probe, and the oscilloscope to test and troubleshoot digital circuits.	Mr. Anupam Maiti Mr. Tapas Kr. Dawn

DAY 4, September 19, 2018 **VENUE:** Language Lab-BES Deptt., Netaji Subhash Engineering College		
09:30-10:45	❖ NSEC biomedical curriculum overview ❖ Curriculum development ❖ Curriculum updating process ❖ Student recruitment and retention ❖ Feed Back and interaction with Selected BME students	Dr. Sukumar Roy
10:45-11.00	**TEA BREAK**	
11:00-13:30	❖ NSEC Biomedical industry partners, Advisory boards, hospital support & program sustainability ❖ Globalization of the BMET program ❖ BMET program operation and development costs ❖ BMET program funding sources ❖ Summary of NSEC BMET program	Dr. Sukumar Roy Mr. Ishan Kundu
13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-15:30	Introduction to patient physiology monitoring	Mr. Ishan Kundu
15:30-15:45	**TEA BREAK**	
15:45-17:15	Hands-on laboratory to operate, evaluate, and troubleshoot a patient physiology monitor.	Mr. Ishan Kundu, Mr. Biswajit Pradhan

DAY 5, September 20, 2018 **VENUE:** Language Lab-BES Deptt., Netaji Subhash Engineering College		
09:30-11:00	Electrosurgical unit (ESU)	Mr. Ishan Kundu
11.00-11:15	**TEA BREAK**	
11:15-13:10	ESU hands-on laboratory	Mr. Ishan Kundu Mr. Saibal Sinha
13:00-14:00	**LUNCH AND PRAYER BREAK**	

14:00-15:30	CPR and defibrillator	Mr. Ishan Kundu
15:30-15:45	**TEA BREAK**	
15:45-17:15	Defibrillator hands-on laboratory and troubleshooting	Mr. Ishan Kundu Mr. Biswajit Pradhan

DAY 6, September 21, 2018		
09:30-12:30	Cultural Visit	
12:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-18:00	Cultural visit	

DAY 7, September 22, 2018 **VENUE:** Language Lab-BES Deptt., Netaji Subhash Engineering College		
09:30-10:45	Ventilator and gas analyzer	Mr. Ishan Kundu
10:45-11.00	**TEA BREAK**	
11:00-13:30	Ventilator and gas analyzer (continued)	Mr. Ishan Kundu
13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-16:00	Ventilator and gas analyzer (continued)	Mr. Ishan Kundu Mr. Biswajit Pradhan
16:00-16:15	**TEA BREAK**	
16:15-17:30	Q&A session & Hands on laboratory	Mr. Ishan Kundu Mr. Biswajit Pradhan

DAY 8, September 23, 2018 **VENUE:** Language Lab-BES Deptt., Netaji Subhash Engineering College		
09:30-11:00	Hemodialysis machine	Dr. Sukumar Roy
11:00-11.15	**TEA BREAK**	
11:15-12:30	Hemodialysis machine (continued)	Dr. Sukumar Roy
12:30-13:30	Ultrasound imaging	Dr. Sukumar Roy
13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-16:00	Ultrasound imaging (continued)	Dr. Sukumar Roy
16:00-16:15	**TEA BREAK**	
16:15-17:30	Ultrasound imagine (continued), and therapy, Q&A	Dr. Sukumar Roy

DAY 9, September 24, 2018 **VENUE:** R.N.Tagore Hall, Netaji Subhash Engineering College		
09:30-11:00	Heart Lung Machine	Mr. Ishan Kundu Dr. Sukumar Roy
11:00-11:15	**TEA BREAK**	
11:15-13:30	Pumps: infusion and patient feeding, hands-on laboratory	Mr. Ishan Kundu
13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-17:30	Medical Gas and Anaesthesia System, OT Light	Industry Visit

DAY 10, September 25, 2018 Visit to JIS College of Engineering		
09:30-10:45	Interaction with faculty & administrative staffs	
10:45-11.00	**TEA BREAK**	
11:00-13:30	Laboratory visit	
12:30-13:30	**LUNCH AND PRAYER BREAK**	
14:30-16:30	Laboratory visit and interaction with students	

DAY 11, September 26, 2018 **VENUE:** Nehru Memorial Techno Global Hospital, Barrackpore		
09:30-11:00	Interaction with the Staff members of BME department Tour of the BMET facility (work shop, tools, etc.)	
11:00-11:15	**TEA BREAK**	
11:15-12:30	Visit to equipment	
12:30-13:30	**LUNCH AND PRAYER BREAK**	
13:30-17:30	Core competencies of the HTM technician Hospital preventive maintenance (PM) procedure	

DAY 12, September 27, 2018 **VENUE:** Language Lab, BES Deptt., Netaji Subhash Engineering College		
09:30-11:00	Computerized Maintenance Management System (CMMS)	Mr. Ishan Kundu
11:00-11:15	**TEA BREAK**	
11:10-13:30	Computerized Maintenance Management System (CMMS)	Mr. Ishan Kundu
13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-15:30	Health Technology Management	Mr. Ishan Kundu
15:30-15:45	**TEA BREAK**	
15:45-17:15	Standards and Recommended Practices	Mr. Ishan Kundu

DAY 13, September 28, 2018		
09:30-12:30	Cultural Visit	
12:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-18:00	Cultural visit	

DAY 14, September 29, 2018 **VENUE:** Physiology Lab-BME Deptt., Netaji Subhash Engineering College		
09:30-11:00	BMET risks, responsibilities, and rewards	Mr. Larry McNeese
11:00-11:15	**TEA BREAK**	
11:15-13:30	Laboratory equipment: microscopes, scales, centrifuge, and spectrophotometer	Mr. Sujan K Samanta
13:30-14:30	**LUNCH AND PRAYER BREAK**	
14:30-15:30	Hematology and PCR machines	Mr. Sujan K Samanta Dr. Nandan K. Jana
15:30-16:15	Feedback and valediction	