



30.01.2015

Report of the Study Tour to British Columbia, Canada under TEQIP – II

A study tour in collaboration with SPFU – Karnataka, National Design Research Forum (NDRF) of The Institution of Engineers (India), Bangalore and Trade and Invest British Columbia (TAIBC), Bangalore was held during 27th October to 1st November 2013. The objective of the study tour was to explore the possibility of collaboration in the areas of Research, Innovation, Faculty and Student Exchange, Training programmes and Projects in association with British Columbia academia and enterprises. The delegation of this study tour comprised of BOG members, co-ordinators, nodal officers – TEQIP, faculty members of TEQIP institutions and officials of NDRF and TAIBC.

The activities performed during 27th October 2013 to 1st November 2013 in British Columbia, Canada:

Day 1: Monday, October 28, 2013.

The delegation of the study tour was taken to British Columbia (BC) Show Case Suite, 2010 South, 800 Robson Suite Vancouver at 09.45 AM. The delegation was welcomed by the officials of BC Show Case, Executive Director of NDRF briefed the objective of study tour to all the officials present during session. The day (10 AM to 06.30 PM) was completely spent by participation in the power point presentation made as shown below:

Speaker	Topic
Mr. Klaus Buttner	Ministry of International Trade Executive Director, Priority Markets to provide welcoming remarks to the delegation
Dr. Chandrasekhar	Presentation of TEQIP Delegation
Mr. Klaus Buttner, Executive Director Michael Nicholar, Director, Edwina Ramirez, Senior Manager Kevin Loyens, Senior Manager Khris Singh, Senior Manager	Presentation of Ministry of International Trade, Priority Markets, India Team
Mr. Kathryn Beaulac, Policy Advisor Tanya Grand, Director, Operations and Programs	Presentation of Ministry of Advanced Education/BCCIE
Dr. Nemkumar Banthia Scientific Director and Chief Executive Officer Tel: +1(604) 822- 9541, banthia@civil.ubc.ca	Presentation of IC Impacts Canada India Research Centre of Excellence
Mr. Leonele Roldan Flores, Acting Executive Director, International, UBC Sarah Dench, Executive Director, SFU International Tracy Wang, Manager, BCIT International Joe Boyd, BCIT Research Liaison Officer Moderated by BCCIE	Presentation of BC Universities – University of British Columbia (UBC), Simon Frazer University (SFU), British Columbia Institute of Technology (BCIT)
Mr. Oba Harding, Director, Business Development	MITACS
Ms. SatwinderPaur, Water and Wastewater Technology Program Coordinator	Meeting with Thompson Rivers University (TBD)
Dr. NimalRajapakse, Faculty of Applied Sciences, SFU	SFU

The scanned copy of the Visiting/Business cards of the officials/ faculty members of visited Universities for future collaboration by faculty members of UVCE are enclosed herewith day wise at the end of the report.

Day 2: Tuesday, October 29, 2013.

The day started with a visit to University of British Columbia. Prof. Vijaya Bhargava, Professor of Electrical and Computer Engineering met the delegates at Fred Kaiser Building, Kaiser Room 4018, 2332 Main Mall and interacted for an hour (09.45 AM to 10.45 AM). He explained various aspects of UBC like admission, students, research, administration and laboratories.

The next visit was to the IC-impacts Civil Engineering Department. Prof. Bhatia, Scientific Director and CEO, along with his research students took the delegates to various civil engineering labs: Earthquake lab, environmental engineering lab, green concrete lab and water treatment lab, to name a few.

Simon Fraser University survey campus located at Mach Mezzanine, Dale Regehr Hall was the next University to visit. Dr. Farid Golnaraghi, Professor & Director and Dr. Krishna Vijayaraghavan, gave an elaborate presentation on various programs of SFU and explained in detail about Mechatronics Systems, Engineering Program and expressed his willingness to enter into MOU to further carryout interactions, student/faculty exchange programs and collaborations. Dr. Krishna accompanied the delegates to a few laboratories in Mechatronics and Systems engineering. The cooperative programmes of the University where in students were provided internship is highly effective.

Day 3: Monday, October 30, 2013.

The day started very early (5 AM) from Vancouver to Victoria through a ferry and reached University of Victoria at 09.30 AM. The delegates were warmly received by a team of Professors and research scholars. The following presentations were made:

Dr. Hausi Muller, Associate Dean, Research	Welcome
Dr. Hausi Muller, Associate Dean, Research	Overview of UVic
TEQIP Leader	Overview of TEQIP
Dr. Rustom Bhiladvala, Professor of Mechanical Engineering, Zuomin Dong, Chair Mech	UVic Exchange Programs
Dr. Havind Sehmi, MITACS	MITACS Program
Dr. Bradley Buckham, Professor of Mechanical Engineering, Curran Crawford, Professor of Mechanical Engineering, Peter Oshkai, Professor of Mechanical Engineering	Tidal, Wind and Ocean Energy
Dr. Rustom Bhiladvala, Professor of Mechanical Engineering	Nano Materials
Dr. Rishi Gupta, Professor of Mechanical Engineering	Canadian Bridges
Dr. Nigel David, RA Mechanical Engineering	Fuel Cells
Dr. Hausi Muller, Professor CSE	Internet Engineering
Dr. Adrew Marton, AVP International, Tom Tiedje, Dean Engineering, Ashoka Bhat, ECE Professor, Mech, CSE, ECE Professors and Students	Posters and Networking including topics of Power Electronics Big Data Analysis, Data Mining, Computer Networks

After the presentation, delegates in groups according to the specializations visited Sensor Network Lab, Data Mining Lab, Power Electronics Lab and Energy Lab.

Visited Camosun College involved in specialized skill development programmes at polytechnic level visited Royal Roads University which is known as interdisciplinary school having expertise in studies of climate change, environmental engineering and ecology. The courses here are not organized by departments but organized around the programmes.

Day 4: Monday, October 31, 2013

On day 4, we visited Ballard Power Systems Inc. which is recognized as the world leader in the design, development, manufacture and sale of clean energy fuel cell systems. The major applications of the product are Telecom Industries, Material Handling Equipments, Automobile and Engineering Services.

Visited Trinity Western University, a Christian university offering courses in various fields of engineering.

Visited Cascade Aerospace involved in overhauling, retrofitting and customizing aircrafts followed by attending networking dinner hosted by UFV/Punjabi Patrika. The dinner was attended by local MLA, Mayor and Commissioner of Consulate of British Columbia.

Day 5: Monday, November 01, 2013

On the last day, we visited Wavefront Technologies, a non profit organization involved in training, R&D, testing of mobile applications and all other aspects of wireless communication.

Visited BC showcase and the presentation on clean energy and Green light innovation was made by officials of the organization.

Visited British Columbia Institution of Technology (BCIT). BCIT is involved in 345 programmes spread over 5 campuses. There are about 2200 faculty and staff. Visited Instrumentation and Energy laboratory of BCIT followed by campus tour by bus.

On the whole, the study tour was very, useful and informative to initiate the activities of (i) Students and Faculty Exchange Programme (ii) Collaborative Research and Development Activity (iii) Twinning Programme (iv) Joint Training Programmes etc.,. As promised, UVCE is expecting MoU/EoI with Simon Fraser University for collaboration activity in the area of Mechatronics.

The areas of expertise of all departments of UVCE for Research & Development has been circulated to all the Universities visited during study tour. The information brochure, presentation material received from the Universities has been kept in the TEQIP office, UVCE for reference by faculty members for collaborative activity.

OUTCOME OF THE STUDY TOUR

As per the discussion held on 19.12.2013 with Mr. Agnel worth of Trade and Investment British Columbia, Bangalore who was the key person to coordinate with Universities in British Columbia, Canada the following progress has been made:

1. University of Victoria (UVIC), Canada:

Prof. Rustom B Bhiladvala has expressed his willingness for all possible collaborative academic activities on behalf of University of Victoria, Canada. The copy of the correspondence may kindly be sent to (i) uvce_teqip@yahoo.com.in and (ii) venugopalkr@gmail.com (iii) bmruvce@yahoo.co. (iv) shenoypd1@gmail.com and (v) thrivenijgowda@yahoo.co.in

The faculty members of UVCE are informed to contact the following Professor of University of Victoria, Canada by Email with a copy to Prof. Rustom B Bhiladvala Professor of Mechanical Engineering, UVIC, British Columbia, Canada. Email: rustomb@uvic.ca,

Sl.No	Areas of Research for collaborative activities	Professor Willing to collaborative with UVCE
1	Power Electronics, Electrical Machines	1. Dr. Ashoka Bhat, Dept. of ECE Email: bhat@ece.uvic.ca 2. Dr. Subhas Nandi, Dept. of ECE Email: snandi@ece.uvic.ca
2	Water Energy, Wind Energy, Fluid Mechanics	1. Dr. Bradley Buckham, Professor Mechanical Engineering Email: bbuckham@uvic.ca 2. Dr. Curran Crawford, Professor Mechanical Engineering Email: currance@uvic.ca 3. Dr. Peter Oshkai, Professor, Mechanical Engineering Email: poshkai@uvic.ca
3	Computer Science and Engineering, Computer Networks, Internet Engineering	1. Dr. Sudhakar Ganti, Professor, Dept. of Computer Science and Engineering Email: sganti@cs.uvic.ca
	Software Engineering	Dr. Hausi Muller, Professor, Dept. of Computer Science and Engineering Email: hausimuller@gamil.com
	Big Data, Analytics, Data mining	Dr. Venkatesh Srinivasan Email: venkat@cs.uvic.ca
4	Nano Materials Research	Dr. Rustom Bhiladvala, Professor, Mechanical Engineering Email: rustomb@uvic.ca
5	Innovative Construction Materials and Structural Health Monitoring	Dr. Rishi Gupta, Professor, Mechanical Engineering, Email: guptar@uvic.ca

2. Dr. Sushil Seli, Manager India, Marketing and Business Development of Royal Roads University and Camosun College visited UVCE on 20.12.2013 to explore the possibility of having MoU with Camosun College which is a leading University in terms of quality education leading to PG diploma. Dr. Sushil Seli has promised to send the draft copy of MoU made with other engineering colleges for possible exchange programmes of student and faculty, pedagogy training and twinning programme for undergraduate students.

3. A meeting with delegation from Camosun College, Victoria, Canada was held on 6-2-2014 at 3.00 PM in UVCE and an MoU was signed for the collaborative academic activities. It is requested that the same be utilized by SPFU, Government of Karnataka, Bangalore for skill development programmes at State level and National level as Camosun College is very well known for effective conduction of skill development programmes in Mechanical, Electrical, Automobile Engineering etc.,

4. The mails received from IC-IMPACTS (India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability), Center of Excellence of University of British Columbia which is involved in strengthening the research and innovation relationship between India and Canada in the last one year for possible collaborative R&D and other academic activities has been brought to the notice of faculty members for participation. IC IMPACTS is primarily focused on community engagement and finding solutions for communities in both Canada and India that need safer and more sustainable infrastructure, improved water management, and better public health systems and treatment methods. It has funding for research in these three areas and are also working on engaging both Canadian and Indian industry sectors to increase trade, knowledge sharing, and skills between both nations.

5.

(i) Two faculty members of Mechanical Engineering Department and one faculty for Mechanical Engineering department who is a research scholar at University of Victoria, British Columbia, Canada have submitted an R&D proposal to the Ministry of New and Renewable Energy (Bio flues Division), Government of India. The title of the project is *“Experimental System Development of an Ethanol Esterified Mahua biodiesel fuelled DRDI multi cylinder diesel engine for agriculture transport sector”*.

Principal Investigator : 1. Dr. D K Ramesh, Associate Professor,
Dept. of Mechanical Engineering, UVCE, Bangalore

Co investigators : 1. Dr. H N Vidyasagar, Associate Professor
Dept. of Mechanical Engineering, UVCE, Bangalore

**2. Dr. Premakumar G, Assistant Professor,
Dept. of Mechanical Engineering, UVCE, Bangalore**

And

Research Scholar, Dept of Mechanical Engg.

University of Victoria, British Columbia, Canada

The study tour has personally helped in enhancing the awareness of the engineering education and research culture. The following are some of the achievements after participating in the study tour.

- i. Number of students awarded Ph.D degree guided by Dr. B M Rajaprakash -01
- ii. Number of Ph.D thesis submitted guided by Dr. B M Rajaprakash - 01
- iii. Number of publication in International Conference by Dr Dr. B M Rajaprakash 03
- iv. Number of publication in referred international Journals by Dr. B M Rajaprakash - 03
- v. Number of ME dissertation work guided by Dr. B M Rajaprakash -06
- vi. One PG student has been made to involve in R&D of stn Health Monitoring which is a thrust area of collaboration activity envisaged by IC IMPACT, Canada.

(ii) The Study tour to Canada from October 27th, 2013 to October 31st, 2013 was a great experience. As professors of the Department of Computer Science and Engineering in University Visvesvaraya College of Engineering, Bangalore, We realized that it was of utmost importance to give the highest priority to research oriented activities in our college. There were certain policies that were adopted to change the norm of the research activities in college. Also, certain forums were created for the benefit of students. The schedule of the students enrolled in Research (PhD) programs was changed to full time instead of part time. And, the students are expected to do full time quality research, for a period of 3 years instead of 4 years as part time students. The number of full time Research Scholars have increased from 3 in 2013 to 23 in 2015.

Discussion forums in specific subjects were formed by the interested students along with distinguished faculty having specialization in that particular subject. The discussion forums on Data Mining, Computer Networks and other trending subjects saw enormous participation from the UG, PG and the PhD students. Discussion is done on every Saturday.

Encouragement is provided to the students to take up mini projects and research in the areas of their interest. Faculty or senior members working in the areas of their interests are assigned as their guides to help them carry out research fluently and also to give them valid inputs to get desired output.

Meetings of the research wing of IEEE UVCE, Aavishkar are conducted on a regular basis where the interested students are appraised about doing research in their areas of interest very systematically. Jointly with other organizations in the college, IEEE UVCE expects to fund certain projects to encourage more students into pursuing research.

We are encouraging the researchers to apply for funded projects at various bodies such as VGST, DST etc., so that real time research can be carried out instead of Simulations due to lack of infrastructure. Students are encouraged to develop a model or Design an Architecture in their relevant fields. In this direction our Department had applied for funds and some of them have obtained funds and carrying out their research and have published papers in various International Conferences and Journals.

Former students of the college have been instrumental in helping to conduct seminars on various cutting edge technologies and giving the industry perspective to the research activities.

1. Bijil Abraham Philip, alumnus of UVCE and a graduate from the University of Southern California was invited on 21st January, 2015 to give a seminar on the Practical applications of Semantic Web, Natural Language Processing and Big Data.
2. Sanketh S Moudgalya, also an alumnus of UVCE and a student of the Rochester Institute of Technology, New York conducted a webinar in March 2014 on Basics and applications of Digital Image Processing.
3. Renowned Professor Rajkumar Buyya, University of Melbourne, Australia and the alumni of Dept. of CSE, UVCE, delivered a talk on challenges in Cloud Computing. One of our student is doing his research work in collaboration with Dr. Rajkumar Buyya.

Since December 2013 till date we have published 24 research papers in various International Conferences and Journals and obtained Two Best paper Awards in some of the Prestigious International Conferences.

We express our sincere thanks to the Chairman and members of BOG and Principal, UVCE, for deputing to undertake study tour under TEQIP-II. We take this opportunity to thank all the officials of SPFU-Karnataka, NDRF-Bangalore and TAIBC-Bangalore for their excellent effort to make the study tour to British Columbia, Canada a successful one.

Dr. B M Rajaprakash
Professor
Dept. of Mech Engg.
UVCE, Bangalore
Programme Coordinator

Dr. P Deepa Shenoy
Professor
Dept. of CSc and Engg.
UVCE, Bangalore
Nodal Officer (Academic)

Dr. Thriveni J
Associate Professor
Dept. of CSc and Engg.
UVCE, Bangalore
Nodal Officer (Procurement)

Enclosures:

1. Scanned copies of Business Cards of officials of Universities / Industries of British Columbia, Canada.
2. Information brochure of UVCE Circulated during visit
3. Presentation material submitted to Universities during visit
4. Presentation material received during visit.
5. Prospectus of various courses and Universities visited
6. Mails received from IC-IMPACTS, Canada.

UNIVERSITY VISVESVARAYA COLLEGE OF ENGINEERING
BANGALORE UNIVERSITY BANGALORE
K R CIRCLE, BANGALORE – 560 001

**TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME
(TEQIP) PHASE-II**

STUDY TOUR REPORT -2

VISIT TO UNIVERSITIES/INDUSTRIES OF BRITISH COLUMBIA,
CANADA DURING 27TH OCTOBER 2013 TO 1ST NOVEMBER 2013.

Submitted by

Dr. B M Rajaprakash
Professor
Dept. of Mech Engg.
UVCE, Bangalore
Programme Coordinator

Dr. P Deepa Shenoy
Professor
Dept. of CSc and Engg.
UVCE, Bangalore
Nodal Officer (Academic)

Dr. Thriveni J
Associate Professor
Dept. of CSc and Engg.
UVCE, Bangalore
Nodal Officer (Procurement)

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