



SHILLONG COLLEGE

A Journey of Five Years
(2010 - 11 to 2014-15)

2010-11

2011-12

2013-14

2012-13

2014-15

Published
By

RESEARCH, INNOVATION &
PUBLICATION CELL
SHILLONG COLLEGE
SHILLONG

SECTION I

1000

Introduction

Theoretical knowledge along with practice brings the purpose of education on a sound footing, so the research based education is linked with the future quality education in this new era of smart learning. Research is an important component in education today, it motivates and forms the basis of thinking out of the box and so it is imperative that research plays a key role in education of the present era. Research can open doors to knowledge that empowers teachers and learners in all spheres of work, studies etc. Moreover it can open opportunities to collaborative exchange with institutions, organisations, corporates all over the country.

It is known that science is a study of facts based on experimental findings, and so scientific research implies that theoretical knowledge along with practice brings the purpose of education on a sound footing, so the research based education is linked with the future quality education in this new era of smart learning. In fact scientific research encourages analytical, practical and observation skills in the young minds. Today's education involves more than just classroom teaching and learning, it goes out of the box. The situation in the present changing world necessitates transformation or redesigning of education system, not only by introducing innova-

tions but developing learner-centric approach in the entire education scenario so that learners are given opportunities to develop and know their skills more than just acquiring knowledge.

In much the same way, social science research has come to occupy an increasingly important role in academic curricula. The basic purpose of social science research is to make sense of what goes around us in our society and in societies other than our own so that there is better understanding of each other within a society and across societies. Thus the objective of social of social scientist is, to understand and analyse the inter-relationship among the structures and processes of all aspects of the social world, including their enduring and changing dimensions. Knowledge of social research is useful for interpreting and weighing reports.

The Research & Publication Cell Shillong College has been constituted on 3rd July 2009 so as to enable teachers and students to undertake projects and in the previous years teachers were also involved in UGC-sponsored Minor Research Projects and till date many teachers are undertaking Minor Projects sponsored by the UGC and by the College as well. Some teachers had publications in reputed journals from the projects they had carried out.

Aims & Objectives

The following are the aims and objectives of the Research & Publication Cell :-

1. To promote research activity of students and teachers.
2. To empower teachers and learners to acquire more knowledge.
3. To open opportunities to collaborative exchange with institutions, organisations, corporates in and outside the country.
4. To encourage analytical, practical and observation skills in the young minds in the scientific research.
5. To introduce innovative mind in students in order to develop a learner-centric approach
6. To develop and improve skills more than just acquiring knowledge.
7. To promote the spirit of scientific enquiry among teachers and students.

8. To create awareness about the various schemes and sponsorships provided by the State and Central Government agencies for major and minor research projects for teachers.
 9. To encourage students to participate and present their findings in scientific gatherings such as seminars, workshops, exhibitions at the college level
 10. To facilitate learning outside the classroom through field work, study tour, projects among students.
-

RESEARCH & PUBLICATION COMMITTEE

Research Cell, Shillong College for the Academic year 2009-12 comprises of the following members :

CONVENER :

Dr R.Dkhar

Department of Education

MEMBERS :

Dr M.N.Bhattacharjee

Department of Chemistry

Dr D.L.Buam

Department of Chemistry

Dr S.Khongwir

Department of Zoology

Dr H.Diengdoh

Department of Education

Mrs P.Kharkrang

Department of Microbiology

Mrs D.Lyngdoh

Department of Botany

Shri S.Goswami

Department of Statistics

Shri G.Rumnong

Department of English

The Research Cell, Shillong College for the Academic year 2013-16 comprises of the following members :

CONVENER :

Dr (Ms) D.L.Buam,

Department of Chemistry

JOINT CONVENERS :

Dr S.Khongwir,

Department of Zoology

Dr(Ms) S.Khyriemujat,

Department of Sociology

MEMBERS :

Dr M.N.Bhattacharjee,

Department of Chemistry

Dr(Ms) R.Dkhar, *Department of Education*

Dr S.Sarma,

Department of Commerce & Management

Dr(Ms) L.M.Jyrwa, *Department of Zoology,*

Dr C.Masharing, *Department of Chemistry*

Smt P.Kharkrang, *Department of Microbiology*

Dr (Ms) I.Lyngdoh,

Department of Microbiology

Dr B.P.Tripathi, *Department of Philosophy*

Dr M.B.Lynser,

Department of Environment Science

Dr B.M.Laloo, *Department of Chemistry*

Shri P.Pyrtuh, *Department of Economics*

FEW LINES FROM THE CONVENER

The Research & Publication Cell Shillong College has been constituted on 3rd July 2009 with the suggestion of the Former Principal Dr (Mrs) M.P.R.Lyngdoh for the need to promote research activity of students and teachers. The College authority had decided to provide financial assistance to carry out projects whereby teachers' projects were sanctioned for Rs 5000 and students' projects were sanctioned for Rs 3000/- for a duration of 6 months. There were 4 teachers' projects in 2009-10, 3 projects in 2010-11, and 3 Teachers-Students Projects in 2009-10, then 1 Teacher's project in 2010-11 and 1 Teachers' Project in 2012-13. Apart from College Minor Projects, some teachers were also involved in UGC-Minor Research Projects NER There were 4 UGC-Sponsored Minor Research projects in 2009-10, in 2014-15 there were 6 Teachers' projects and 5 Teachers-Students' Projects sponsored by the college that are ongoing and some are completed and there were 7 UGC-MRP proposals in 2014 out of which 5 were approved by the UGC for the duration 2014-15.

Recently the Fund Allocation Committee that has been constituted in the College had regulated and recommended new changes in funding projects where Science, Technology & Environment Project to be given Rs 20,000/- for the duration of 24 months and Rs 12,000/- for the duration of 10-15 months and Arts, Humanities & Commerce Projects regulated at Rs

15,000/- for the duration of 24 months and Rs 10,000/- for the duration of 10-15 months. All research projects recommended by Research Committee are submitted to the Principal through the Fund Allocation Committee for the final release of grants.

The Research & Publication Cell in a committee had decided to compile all UGC-MRP and College Project reports as a volume to be published by the Research Cell Shillong College, the first volume entitled 'Venturing into Research & Innovation' published by the Research & Publication Cell has been formally released on 16th October 2015 by Prof B.Myrboh, Former Pro VC, NEHU. The Research & Publication Committee also organized an interactive programme on 'Research & Innovation in Undergraduate Colleges' on the same day and the speaker was Prof B.Myrboh. He delivered a speech in which he stressed on the need to take up research projects in colleges especially in the field of medicinal, aromatic and botanical plants that avail in the north eastern states which can be tapped for their therapeutic and medicinal use. He also narrated from his experience the medicinal values of some plants that can heal injuries etc. He showed his gestures of willingness to help students and teachers who wish to take up minor research projects which can be collaborated with NEHU. There was a lot of interaction from teachers and students as well.

GUIDELINES FOR COLLEGE MINOR PROJECTS

1. Departments are to see that Honours students can submit proposals for projects.
2. Format of application can be obtained from the college website or from the office of the Vice Principal.
3. Filled applications are to be submitted to the Research Cell on or before 31st July of the Academic Session.
4. The duration of the Project is 1 or 2 years from the date of implementation of the project depending on the sanction amount.
5. Submission of Project Report along with statement of expenditure and vouchers certified by the Principal Investigator will be required at the time of completion.
6. Two hard copies and one soft copy of the project report to be submitted to the Research Cell.
7. Compilation of Project reports in the form of a volume for a duration of every five years is done by the Research Cell.
8. Teachers/ Students with incomplete ongoing projects cannot apply for a new project unless

- and until the old project is completed and submitted along with other details.
9. Funding of Projects is subject to the number of Projects during the Academic session.
 10. Recommendation of the Fund Allocation Committee, Shillong College for funding of the College Projects from 2015 onwards –
 - Science, Technology & Environment Project**
Rs 20,000/- for the duration of 24 months
 - Rs 12,000/- for the duration of 10-15 months
 - Arts, Humanities & Commerce Projects**
Rs 15,000/- for the duration of 24 months
 - Rs 10,000/- for the duration of 10-15 months.
 12. All funds will be sanctioned when recommended by the 3-membered committee of Research Cell and the subsequent progress of the work and also the report of the final completion will all be assessed by the Research Cell.
 13. In case of project is sanctioned and the fund is released but the P.I is not able to initiate the work within a period of 120 days (4 months) from the date of sanction, he/she will be liable to refund the entire amount along with explanation.
 14. All research projects recommended by Research Committee will be submitted to the Principal through the Fund Allocation Committee for the final release of grants.

LIST OF COLLEGE MINOR PROJECTS SPONSORED BY THE COLLEGE FROM 2009 TILL DATE

Teachers' Projects (2009-2010)

1. Role of Khasi Women in a Changing World
- Dr. H. Iangrai, Department of Education
2. Formation of the Creation Myth of the Garos
- Mrs L. Marak, Department of Garo
3. Women's participation in the Electoral process-A case study of the recent Assembly Election in Laitumkhrah
- Mrs A. Marbaniang, Department of Political Science
4. A study of the attitude of College Students towards Abortion
- Mrs K. Lartang, Department of Philosophy

Teachers'-Students' Projects (2009-2010)

1. Green Marketing for Sustainability Development – A Case of Star Cement Manufacturing Company Ltd,
- Mrs W.C.K. Sohliya & BBA/III students
2. Making a Galilean Telescope
- Mr. S. Lato, Department of Physics & B.Sc III(Hons)

3. Study of Adsorption of Oxalic acid at different concentrations on Charcoal/Rice husk Ash and hence to verify Freundlich's Adsorption Isotherm.

- *Dr. C. Masharing & D.L. Buam, Department of Chemistry & B.Sc III(Hons) students*

Teachers' Projects (2010-2011)

1. The Teaching of Hindi as second/Third Language with special reference to the Khasi, Garo & Jaintia learners in the state of Meghalaya
- *Dr. S.Pandey, Department of Hindi*
2. *Gaultheria fragrantissima* wall (The Indian Wintergreen): Its uses and management in Mawphlang
- *Dr(Ms) A. Lyngdoh, Department of Botany*
3. Microbial analysis of water samples of Umkhrah and Umshyrpi rivers in Shillong, East Khasi Hills District, Meghalaya
- *Mrs D.N.Shabong/Dr.S.Khongwir, Department of Zoology*

Teachers' Projects (2011-2012)

1. A Progress Report On A Project Entitled "Possible Cytotoxicity And Genotoxicity Effects of A Neem Based Pesticide, Neemastra On Meristemic Cells Of *Allium Cepa*
- *Dr L.M.Jyrwa & D.N.Shabong, Department of Zoology*

Teachers' Projects (2012-13)

1. Documentation of wild edible fruits of Mawsynram & its adjoining areas
- *D.Kharshandi & D.Lyngdoh, Department of Botany*

Teachers' Projects (2014-15)

1. A user survey on the usage of Academic Libraries by undergraduate students in Shillong-
-*Mrs B.Lyngdoh, Librarian, Shillong College*
2. Assessing Microbiological Safety of Drinking water in Shillong, Meghalaya
- *Dr(Ms)I.Lyngdoh, Principal Investigator & Mrs M.Diengdoh, Co-Investigator*
3. To find the exact value of 'g' in Shillong and hence the fractional change in the value of 'g' with altitude using electrical timer-
- *Shri L.Khongiang-Principal Investigator, Shri A.Dkhar- Co-Investigator*
4. Chemical and Microbial Analysis of Water Samples from Shillong
- *Dr C.Masharing- Principal Investigator, Dr D.L.Buam, Ms B.M.Laloo, Ms L.Pathaw - Co-Investigators*
5. Study of Physico-Chemical Parameters as well as biomonitoring of Umkaiar Stream
- *Dr (Ms)L.M.Jyrwa, Department of Zoology*
6. Study of Plant Diversity of Shillong College Extended Campus at Umroh, Mawkasiang
-*Dr M.B.Lynser, & Shri B.Mawrie, Environmental Studies*

Teacher-Students' Projects (2014-15)

1. Production of Citric Acid using *Aspergillus niger* –
- *Dr(Ms) I.Lyngdoh - Principal Investigator & Ramreishang Wungmaiwo, Mebarishisha Lyngrah, Lasiewdor Marpna, Akoijam Rishikanta Singh - Co-investigators*
2. Survey of fish diversity of Umshait River in Ri-Bhoi District, Meghalaya, India
- *Dr S.Khongwir & Sebastian Syngkli (Zoology)- Co-Investigator*
3. Diversity and Abundance of insects at Nongrim Hills, Shillong
- *Dr S.Khongwir & Holystar Horam, (Zoology) - Co-investigator*
4. Assessing the Biodiversity of insects in Shillong College Campus
- *Dr S.Khongwir & Anilkumar Sinam (Zoology)- Co-investigator*
5. Principles of Soil Science
- *Dr S.Khongwir & Shanti Bikash Chakma (Zoology)- Co-investigator*

Teachers' Projects (2015-16) (ongoing)

1. Surveying the distribution and ecological habitat of Funnel web Spider in East Khasi Hills, Meghalaya
- *Dr Lucy M. Jyrwa & Students, Department of Zoology*
2. Learning Difficulties of Higher Secondary students
- *Ms B.Wanswett Department of Education*
3. Students' Attitude towards Physics Practical at the UG Level- A study of Colleges in Meghalaya
- *Shri L.Khongiang & Shri Aiborlang Dkhar, Department of Physics*
4. Problems faced by Students in learning Mathematics in Secondary Level
- *Mrs J.R.Gidon, Department of Mathematics*

Teacher-Students' Projects (2015-16) (ongoing)

1. Survey of Anuran Species in and around Mawkyrwat South West Khasi Hills District
- *Dr S.Khongwir & Kobitstar Nongsiej, Department of Zoology*
2. Study of Fish Diversity of some selected rivers and streams in Amlarem, Jaintia Hills District
- *Dr S.Khongwir & Lasolang Jones Rymbai, Department of Zoology*
3. Smart Kitchen
- *Shri Donald Thabah & Amit Kumar Sunar, Department of Computer Science*
4. Study of Soil Arthropods in some selected paddy fields in Nongthliew, West Khasi Hills
- *Dr S.Khongwir & Shaniahskhem, Department of Zoology*
5. Qualitative & Quantitative analysis of phytoplankton from water samples of Mawthadraishan
- *Mrs Darina Kharshandi & Pynbitbha Rynjah, Department of Botany*
6. Qualitative & Quantitative Analysis of Zoo plankton from water samples of ponds around Mawthadraishan, West Khasi Hills
- *Dr L.M.Jyrwa & Jane Adalene Department of Zoology*
7. Study of the Haematological & Histological effects of *Naemastra* in blood cells & tissues of *clarias gariebinus*
- *Dr L.M.Jyrwa & Phidapynbha Department of Zoology*
8. Bacteriological analysis of pond water located in Mawthadraishan
- *Mrs M.Diengdoh & Banridor Kharbyngar, Department of Microbiology*

Teacher-Students' Projects (2016-17) (ongoing)

1. Students' Academic Performance prediction using a simple clustering algorithm
-Shri Jutang Swer & Grefferson Malngiang, Department of Computer Science

LIST OF MINOR RESEARCH PROJECTS SPONSORED BY THE UGC, NERO

Projects (2009-11)

1. Studies of Nitrogen excretion pattern in different tadpole stages of *Rhachophorus maximus*
-Dr(Ms) L.M.Jyrwa, Department of Zoology
2. Nutritional Status Among Adolescent School Girls In Shillong
- Shri Sankar Goswami, Department of Statistics
3. Synthesis, Characterisation and Biological Studies of Heavier Elements of Group- 15
-Dr C.Masharing, Department of Chemistry

Projects (2012-13)

1. Data compilation and Assessment-Rules of Marriage in Tribal Societies: The Views of Youth SAP-DRS, Phase-111, UGC, New Delhi
- Smt A.Lyngdoh, Department of Sociology, Shillong College.

Projects (2015-17) (ongoing)

1. Impacts of Stone and sand quarrying on aquatic ecosystems along Umtngar river, East Khasi Hills district, Meghalaya
- Dr(Ms)L.M.Jyrwa, Department of Zoology
2. Physico-Chemical Analysis of river water supply in Mawlai Shillong
- Dr S.Khongwir, Department of Zoology
3. Khasi Bhasha aur sahitya ka vikasantmak adhyayan- A study of the development of Khasi language and literature
- Dr (Mrs) S.Pandey, Department of Hindi
4. Non-Timber Forest Products use and extraction in community forests of East Khasi Hills District of Meghalaya
- Dr (Ms)M.B.Lynser, Environmental Studies
5. BF3. Et₂O mediated alpha-halogenation of Propiophenones
- Dr(Ms) B.M.Laloo & Ms L.Pathaw, Department of Chemistry.

Projects (2016-18)

1. Ultra-structural and elemental analysis of certain tissues of *Cyprinus carpio* (common carp) inhabiting two government sponsored fish farms in East Khasi Hills District Meghalaya
-Dr E.M.Pala, Department of Zoology.

LIST OF PROJECT 2015-17 SPONSORED BY MHRD

1. Quality of Higher Education in India :A Study of External and Internal Quality Assurance at the Institutional Level
-Smt I.Khyriem, Department of Statistics

PUBLICATIONS FROM THE MINOR PROJECTS CARRIED OUT BY THE TEACHERS

International Journal of Recent Scientific Research
Vol. 5, Issue, 11, pp 2141-2145, November, 2014

CYTOTOXICITY AND GENOTOXICITY EFFECTS OF A NEEM BASED PESTICIDE, NEEMA STRA ON MERISTEMIC CELLS OF ALLIUM CEPA

*¹L.M.Jyrwa, ¹D.N.Shabong, ²James Khongsngi & ¹S.Khongwir

¹Department of Zoology, Shillong College, Shillong, India

²Department of Zoology, NEHU, Shillong

Abstract

The cytotoxic and genotoxic effect of neem based pesticide Neemastra (90 % neem oil extract and 10 % other inert compounds) was studied using *Allium cepa* test model. Based on EC50 curve, different concentrations of Neemastra were taken for conducting the experiment. It was found that the biopesticide inhibits the growth of the root length of the onion roots and it is concentration as well as time dependent. Cytological assayed on the root tips showed a decrease in the mitotic index with increased in interphase stage of the clastogenic effects and laggard chromosomes indicating spindle poisoning.

NeBIO

An international journal of environment and biodiversity

Vol. 6, No. 4, December 2015, 19-25

ISSN 2278-2281(Online Version)

www.nebio.info www.neceer.org.in

PLANT DIVERSITY AND PHYTOSOCIOLOGICAL ATTRIBUTES IN SHILLONG COLLEGE EXTENDED CAMPUS, SHILLONG

M.B. Lynser* and B. J. Mawrie

Department of Environmental Studies, Shillong College,
Shillong -793003, Meghalaya, India

Email: mlynsr@gmail.com

Abstract

The present study was carried out at the Shillong College Extended Campus in Umroh-Mawkasiang, Meghalaya with the aim to explore plant diversity and understand the role of academic institutions in biodiversity conservation and management. Floristic composition and phyto-sociological characteristics of the vegetation in the college campus were studied using standard ecological methods. A number of data analysis parameters such as frequency, density, abundance, etc. were employed. As many as 89 plant species belonging to 72 genera (1 unidentified) and 54 (1 unidentified) families were recorded in the

campus. From amongst trees, shrubs and herbs it was seen that Fagaceae, Moraceae and Asteraceae were the dominant species respectively. The forest within the campus is highly heterogeneous and patchy in terms of species distribution. The study is hope to encourage further research in other institutional campuses as well, as such studies would definitely add to the much need information base of plant biodiversity in our region.

Keywords:

Species richness, Density, Biodiversity, Conservation, Academic Institution, Meghalaya

International Journal of Research in Environmental Science and Technology

2014; 4(1): 1-5

ISSN 2249-9695

Original Article

**PHYSICO-CHEMICAL AND BACTERIOLOGICAL ANALYSIS OF
RIVER UMKHRAH, SHILLONG, MEGHALAYA, INDIA**

S. Khongwir^{1*}, D. N. Shabong^{1*}, L. M. Jyrwa^{1*}, B. Dohling^{1*}, M. Diengdoh^{2*}

^{1*}Department of Zoology, Shillong College, Shillong 793003, Meghalaya, India

^{2*}Department Of Microbiology, Shillong College, Shillong 793003, Meghalaya, India

*Corresponding author: shanwell_k@yahoo.co.in

Abstract

The study was conducted to examine the quality of surface water of river Umkhrah in Shillong, Meghalaya, India. The samples were collected randomly in the month of November 2012 and July 2013 from three study stations. The samples were analysed for pH, alkalinity, biological oxygen demand and chemical oxygen demand. The results indicate that during the month of November 2012 and July 2013, the pH ranged from 5.1-7.2, Alkalinity 92-196 mg/l, BOD 36-169 mg/l and COD 51-295 mg/l. The bacteriological analysis showed that *E.coli* and *Enterobacter cloacae* were present in all the samples. The study therefore, showed that the water cross the maximum permissible limit of ICMR and WHO and therefore is not fit for human activities and pose a great health risks to people utilising it. In the present investigation, the need to control pollution of the river is emphasized.

Keywords:

River Umkhrah, physio-chemical characteristics, E.coli, Enterobacter cloacae

ENUMERATION AND THREAT STATUS OF WILD EDIBLE FRUITS IN MAWSYNRAM COMMUNITY DEVELOPMENT BLOCK, MEGHALAYA, INDIA

Dalari Lyngdoh & Darina Kharshandi

Department of Botany, Shillong College, Shillong- 3, Meghalaya

Abstract

The present study was conducted to enumerate and investigate the threat status and uses of wild edible fruits in Mawsynram Community Development Block (CDB), Meghalaya, India. Twelve villages were surveyed and a total of 59 plant species belonging to 39 genera and 28 families of wild edible fruits were recorded with their status. The dominant family was Rosaceae with 10 species from 5 genera followed by Rutaceae with 7 species belonging to 2 genera. Out of the 59 fruit species, 43 species were common, 9 endemic, 2 endangered, 1 threatened, 2 vulnerable and 2 were very rare. Additionally, 18 species (30.5%) were semi-wild and 8.5% have ethno-medicinal value.

Keywords

Wild edible fruits, Threat status, Uses, Conservation issues, Mawsynram Community Development Block

ASIAN JOURNAL OF PHARMACEUTICAL AND BIOLOGICAL RESEARCH ORIGINAL ARTICLE

Minor fruits used by locals in two hill districts of Meghalaya, North East India

Darina Kharshandi¹, Dalari Lyngdoh¹, D. Bokolia²

¹Assistant Professor, Department of Botany, Shillong College, Shillong, Meghalaya.

¹Assistant Professor, Department of Botany, Shillong College, Shillong, Meghalaya.

²Assistant Professor, Department of Botany, St. Anthony's college, Shillong, Meghalaya

Abstract

Objectives: The tribal people of Meghalaya, northeast India, through their experience, have developed a rich traditional knowledge of a variety of plant uses. The present investigation was aimed at recording the minor fruits used by local people of two hill districts of Meghalaya together with their nutritive or ethno-medicinal or pharmacological values and also to identify the species with economic potential.

Methods: The study was carried out by conducting interviews with local people and seeking their help in locating the plants in the wild. Local markets were frequently visited for recording the market availability. Data about nutritive, ethno-medicinal or pharmacological values of the plants were recorded from secondary sources.

Results: The study revealed 60 species of minor fruits belonging to 40 genera and 28 families used by local people of the area. Out of these, 25 species were available in local markets. 12 species were reported as minor fruits for the first time. The species were mainly trees followed by shrubs and climbers. Dominant family was Rosaceae with 10 species followed by Rutaceae (7 sp) and Ericaceae (4 sp). These species are important from nutritive and medicinal point of view and also used in other places in India and abroad.

Conclusion: Minor fruits, once an important part of diet of local people are slowly disappearing from the diet. Due to large scale habitat destruction, these fruits are also facing the threat of extinction. In this situation proper strategies should be developed for conservation and sustainable utilization of these fruit species.

Key words: *Minor fruits, hill districts, Meghalaya.*

Wiley Publication: Heteroatom Chemistry

Volume 23, Issue 5, pages 457–465, 2012

DIORGANOTIN(IV) COMPLEXES OF POLYAROMATIC AZO-AZOMETHINE LIGAND DERIVED FROM SALICYLALDEHYDE AND ORTHO-AMINOPHENOL: SYNTHESIS, CHARACTERIZATION, AND MOLECULAR STRUCTURES

¹C .Masharing, ²S Basu, ³B. Das

¹*Department of Chemistry, Shillong College, Shillong 793003, Meghalaya, India*

²*Department of Chemistry, Shillong College, Shillong 793003, Meghalaya, India*

³*Department of Chemistry, IIT Guwahati, 781039, Assam, India*

**Corresponding author: cmasharing@gmail.com*

Abstract

The diorganotin(IV) complexes of methyl 2-{4-hydroxy-3-[(2-hydroxy-phenylimino)-methyl]-phenylazo}-benzoate (H2L) were obtained by the reaction of *ortho*-aminophenol, R₂SnO (R = Me, ⁿBu, or Ph) and methyl 2-[(E)-(3-formyl-4-hydroxy)diazenyl]benzoate (H2PL²) in ethanol, which led to diorganotin(IV) compounds of composition [Me₂SnL]₂ (**1**), ⁿBu₂SnL (**2**), and Ph₂SnL (**3**) in good yield. The ¹H, ¹³C, and ¹¹⁹Sn NMR, IR, the mass spectrometry along with elemental analyses allowed establishing the structure of ligand (H2L) and compounds **1–3**. In all the three cases, ¹¹⁹Sn chemical shifts are indicators of five-coordinated Sn atoms in a solution state. The crystal structures of ligand H2L and complexes **1** and **2** were determined by a single crystal X-ray diffraction study. In the solid state, the ligand H2L exists as a keto-enamine tautomeric form. The molecular structure of complex **1** in the solid state shows a distorted octahedral geometry around a tin atom due to additional coordination with an oxygen atom from a neighboring molecule leading to a four-membered ring with Sn-O···Sn-O intermolecular coordination, leading to a dimeric species. On the other hand, complex **2** is a monomer with trigonal bipyramidal geometry surrounding the tin atom. © 2012 Wiley Periodicals, Inc. *Heteroatom Chem* 23:457–465, 2012; View this article online at wileyonlinelibrary.com. DOI 10.1002/hc.21037

SUMMARY OF PROJECTS

PROJECTS SPONSORED BY THE COLLEGE

PROJECTS SPONSORED BY UGC, NERO

Year	Teachers'	Student Teachers'
2009-10	4	3
2010-11	3	
2011-12	1	
2012-13	1	
2014-15	6	5
2015-16	6	6
2016-17		1

Year	Science	Arts
2009-11	3	0
2015-17	4	1
2016-17	1	0

FUNDING OF THE PROJECTS

COLLEGE MINOR PROJECTS 2014-15 SANCTIONED BY THE COLLEGE

1. Production of Citric Acid using *Aspergillus niger*
- *Dr(Ms) I.Lyngdoh & Students* (Rs. 11,500/-)
2. Assessing Microbiological Safety of Drinking water in Shillong, Meghalaya
- *Dr(Ms)I.Lyngdoh & - Mrs M.Diengdoh , C* (Rs. 7,000/-)
3. To find the exact value of 'g' in Shillong and hence the fractional change in the value of 'g' with altitude using electrical timer
- *Shri L.Khongiang & Shri A.Dkhar* (Rs. 18,000/-)
4. Survey of fish diversity of Umshait River in Ri-Bhoi District, Meghalaya, India
- *Dr S.Khongwir & Sebastian Syngkli* (Rs. 18,500/-)
5. Chemical and Microbial Analysis of Water Samples from Shillong
- *Dr C.Masharing, Dr D.L.Buam, Ms B.M.Laloo, Ms L.Pathaw* (Rs. 10,000/-)
6. Diversity and Abundance of insects at Nongrim Hills, Shillong
- *Dr S.Khongwir & Holystar Horam,* (Rs. 12,800/-)
7. Principles of Soil Science
- *Dr S.Khongwir & Shanti Bikash Chakma* (Rs. 10,050/-)
8. Study of Physico-Chemical Parameters as well as biomonitoring of Umkaliar Stream:
- *Dr (Ms)L.M.Jyrwa* (Rs. 10,000/-)
9. Study of Plant Diversity of Shillong College Extended Campus at Umroh, Mawkasiang
- *Dr M.B.Lynser & Shri B.Mawrie* (Rs. 10,000/-)

COLLEGE MINOR PROJECTS 2015-16 SANCTIONED BY THE COLLEGE

1. Surveying the distribution and ecological habitat of Funnel web Spider in East Khasi Hills, Meghalaya - *Dr Lucy Jyrwa & Students, Department of Zoology* (Rs. 20,000/-)
2. Learning Difficulties of Higher Secondary students
- *Ms B.Wanswett Department of Education* (Rs. 10,000/-)
3. Survey of Anuran Species in and around Mawkyrwat South West Khasi Hills District
- *Dr S.Khongwir & Kobitstar Nongsiej, Department of Zoology* (Rs. 7,650/-)
4. Study of Fish Diversity of some selected rivers and streams in Amlarem, Jaintia Hills District
- *Dr S.Khongwir & Lasolang Jones Rymbai, Department of Zoology* (Rs. 8,580/-)
5. Smart Kitchen
- *Shri Donald Thabah & Amit Kumar Sunar, Department of Computer Science* (Rs. 5,100/-)
6. Study of Soil Arthropods in some selected paddy fields in Nongthliew, West Khasi Hills
- *Dr S.Khongwir & Shaniahskhem, Department of Zoology* (Rs. 8,000/-)
7. Students' Attitude towards Physics Practical at the UG Level- A study of Colleges in Meghalaya
- *Shri L.Khongiang & Shri Aiborlang Dkhar, Department of Physics* (Rs. 22,000/-)
8. Problems faced by Students in learning Mathematics in Secondary Level
- *Mrs J.R.Gidon, Department of Mathematics* (Rs. 8,000/-)
9. Qualitative & Quantitative analysis of phytoplankton from water samples of Mawthadraishan
- *Mrs Darina Kharshandi & Pynbitbha Rynjah, Department of Botany* (Rs. 10,000/-)
10. Qualitative & Quantitative Analysis of Zoo plankton from water samples of ponds around Mawthadraishan, West Khasi Hills
- *Dr L.M.Jyrwa & Jane Adalene Department of Zoology* (Rs. 10,000/-)
11. Study of the Haematological & Histological effects of Naemastra in blood cells & tissues of clarias gariebinus - *Dr L.M.Jyrwa & Phidapynbha Department of Zoology* (Rs. 18,000/-)
12. Bacteriological analysis of pond water located in Mawthadraishan
- *Mrs M.Diengdoh & Banridor Kharbyngar, Department of Microbiology* (Rs. 10,000/-)

UGC-MRP Proposals 2010-11 Sanctioned by the UGC, NERO

1. Studies of Nitrogen excretion pattern in different tadpole stages of *Rhachop horus maximus*
- *Dr(Ms) L.M.Jyrwa, Department of Zoology* (Rs. 2,00,000/-)
2. Nutritional Status Among Adolescen.....t School Girls In Shillong
- *Shri Sankar Goswami, Department of Statistics* (Rs.)
3. Synthesis, Characterisation and Biological Studies of Heavier Elements of Group- 15
- *Dr C.Masharing, Department of Chemistry* (Rs. 1,70,000/-)

UGC-MRP PROPOSALS 2015-16 SANCTIONED BY THE UGC,NERO

1. Impacts of Stone and sand quarrying on aquatic ecosystems along Umtngar river, East Khasi Hills district, Meghalaya
- *Dr(Ms)L.M.Jyrwa, Department of Zoology* (Sanction Amount Rs. 4,60,000/-)
2. Physico-Chemical Analysis of river water supply in Mawlai Shillong
- *Dr S.Khongwir, Department of Zoology* (Sanction Amount Rs. 4,00,000/-)
3. Khasi Bhasha aur sahitya ka vikasantmak adhyayan-
A study of the development of Khasi language and literature
-*Dr (Mrs) S.Pandey, Department of Hindi* (Sanction Amount Rs. 3,00,000/-)
4. Non-Timber Forest Products use and extraction
in community forests of East Khasi Hills District of Meghalaya
- *Dr (Ms)M.B.Lynser, Environmental Studies* (Sanction Amount Rs. 3,25,000/-)
5. BF₃.Et₂O mediated alpha-halogenation of Propiophenones
- *Ms B.M.Laloo & Ms L.Pathaw,*
Department of Chemistry (Sanction Amount Rs. 2,40,000/-)

UGC-MRP PROPOSALS 2016-17 SANCTIONED BY THE UGC,NERO

1. Ultra-structural and elemental analysis of certain tissues of *Cyprinus carpio* (common carp) inhabiting two government sponsored fish farms in East Khasi Hills District Meghalaya
- *Dr E.M.Pala, Department of Zoology* (Sanction Amount Rs. 3,20,000/-)

Projects funded by college

Year	2010-11	2014-15	2015-16	2016-17
Teachers	Rs. 14000	Rs. 40000	Rs. 40000	—
Students	—	Rs. 64850	Rs. 87330	Rs. 10000

Projects funded by UGC

Year	2014-15	2015-16	2016-17
Teachers	Nil	Rs. 1725000	Rs. 320000

RESEARCH PROGRESS

TEACHERS WITH PH.D AND WITH M.PHIL DEGREE

List of Ph.D holders

Dr K.D.Ramsiej , Principal
Dr M.Dey, Vice Principal
Dr(Mrs) D. Bhowmick , HoD, English
Dr. (Mrs) J.P. Biswas, HoD, Philosophy
Dr. B.P. Tripathi, Philosophy
Dr.(Mrs) D. Mawroh, Khasi
Dr. (Mrs) A. Nongbri, Khasi
Dr. (Mrs) Shruti Pandey,Hindi
Dr. S. Sarma, Commerce
Dr. (Mrs) R. Dkhar,Education
Dr. H. Iangrai,,Education
Dr (Mrs). H. Diengdoh,Education
Dr(Mrs). E. Kharkongor, Economics
Dr. (Ms) I. Lyngdoh, Microbiology
Dr. (Mrs) A. Lyngdoh, Botany
Dr. (Mrs) Marvellous B. Lynser, Environment
Dr (Mrs). S. Khyriemujat, Sociology
Dr. M.N. Bhattacharjee, Chemistry
Dr. (Ms) D.L. Buam, Chemistry
Dr C.Masharing, Chemistry
Dr. (Mrs) E.M. Pala, Zoology
Dr. (Ms) L. M. Jyrwa, Zoology
Dr. S. Khongwir, Zoology
Dr (Ms) B.M.Laloo, Chemistry
Dr (Mrs) Barisha Wahlang, Chemistry

List of M.Phil holders

Smti.. J Chowdhury, History
Shri. Gavet R. Rumnong, English
Shri. L.M. Pariat, English
Shri H. Marwein, Khasi
Shri. S. Kharrymba, Khasi
Smti. V.R. Solomon, Political Science
Smti. W.C.K. Sohliya, Management
Shri. D. Shadap, Mathematics
Shri. M.W. Synrem, Mathematics
Smt. J. Rivulet Gidon, Mathematics
Smt. S. R. J. Khongwar, Sociology
Smt D.Diengdoh, Sociology
Smti. A.M. Mitri, Computer Science
Shri P.Shabong, Khasi
Shri P.Pyrtuh, Economics

TEACHERS WITH MPHIL/PHD IN THE LAST FIVE YEARS

The following is the list of teachers have been awarded the PhD/MPhil degree in the last five years from 2010-2015 :

1. **Mr P.Shabong**, Department of Khasi was awarded M.Phil Degree in 2010
2. **Mrs A.Mitri**, Department of Computer Science was awarded M.Phil Degree in 2010
3. **Mrs J. Rivulet Gidon**, Department of Mathematics awarded M.Phil in 2011
4. **Dr S.Sarma**, Department of Commerce awarded Ph.D Degree in 2011
5. **Dr M.Challam**, Part-time Teacher of Zoology was awarded Ph.D Degree in 2011
6. **Dr H.Diengdoh** , Department of Education, awarded PhD in 2011
7. **Dr I.Lyngdoh**, Department of Microbiology was awarded Ph.D Degree in 2012
8. **Dr Marvellous Lynser**, Department of Environment was awarded Ph.D Degree in 2013
9. **Dr Donald B.Jyrwa**, Part-time Teacher of Zoology was awarded Ph.D Degree in 2013
10. **Dr S.Khyriemujat**, Department of Sociology was awarded Ph.D Degree in 2013
11. **Mrs W.C.K.Sohliya**, Department of Management was awarded M.Phil Degree in 2014
- 12.. **Dr(Mrs)A.Lyngdoh**, Department of Botany, awarded Ph.D Degree on December 2014
- 13.. **Mr P.Nongrum**, Department of Khasi was awarded M.Phil Degree in 2014
14. **Dr(Mrs)Barisha Wahlang**, Department of Chemistry, Shillong College- 5th February 2015
15. **Dr(Ms)E.M.Pala**, Department of Zoology, awarded Ph.D Degree on 6th May 2015
16. **Dr (Ms) B.M.Laloo**, Department of Chemistry awarded Ph.D on 30th July 2015

TEACHERS PURSUING RESEARCH AT PRESENT

SCIENCE STREAM

1. **Mrs W.Lyttand**, *Department of Microbiology*
2. **Shri S.Kharchandy**,
Department of Mathematics
3. **Shri D.Shadap**, *Department of Mathematics*
4. **Shri S.Lato**, *Department of Physics*
5. **Smt L.Pathaw**, *Department of Chemistry*
6. **Smt I.Khyriem**, *Department of Statistics*
7. **Shri. B. Mawrie**,
Department of Environmental Science

ARTS STREAM

1. **Smt D.Diengdoh**, *Department of Sociology*
2. **Smt S.Khongwar**, *Department of Sociology*
3. **Smt Janet Dkhar**, *Department of English*
4. **Smt Angelica Lyngdoh**,
Department of Sociology

COMMERCE STREAM

1. **Smt W.C.K.Sohliya**,
Department of Management
2. **Smt I.Diengdoh**, *Department of Management*
3. **Shri P.Kipgen**, *Department of Management*

The overall picture is a growth in the research activity in the last five years and our anticipation is that in the academic session 2015-16 there may be a rise in the trend of the research activity.

ACADEMIC SUB COMMITTEE FOR NAAC RE- ACCREDITATION

Academic Sub Committee for NAAC Re- Accreditation, Shillong College for the Academic Year 2015-16

CONVENER :

Dr (Ms) D.L.Buam,
Department of Chemistry

JT CONVENER :

Dr(Mrs) S.Khyriemujat,
Department of Sociology

MEMBERS :

Dr(Ms) R.Dkhar,
Department of Education

Dr P.Bhowmick,
Department of English

Smt B.Wanngiang,

Department of English

Dr (Mrs)J.Paul,
Department of Philosophy

Shri A.Dkhar,
Department of Physics

Dr(Mrs)D.Mawroh,
Department of Khasi

Dr(Ms) L.M.Jyrwa,
Department of Zoology

Smt D.Lyngdoh,
Department of Botany

Smt J.R.Gidon,
Department of Mathematics

FEW LINES FROM THE CONVENER

The Academic Sub- Committee has been constituted on 18th June 2015 by the Steering Committee in connection with the forthcoming third cycle of NAAC Re- Accreditation which is going to take place in April 2016. The Academic Committee had organized a one day programme on 'Choice-Based Credit System : Challenges and Prospects'. As we all know, the Ministry of Human Resource Development (HRD), Govt. of India, has already initiated the process for developing New Education Policy (NEP) in our country to bring out reforms in Indian education system. In this connection, the UGC has already initiated steps to bring equity, efficiency and academic excellence in National Higher Education System. It may be noted that with the implementation of the Semester Programmes in UG Colleges it is imminent that sooner or later the new system of CBCS will be adopted in UG Colleges. With this view, the Aca-

demie Sub-Committee, for NAAC Reaccreditation, Shillong College had organized a one day Programme on 'Choice-Based Credit System : Challenges and Prospects' on the 13th August 2015 so as enable all stakeholders in education system to get acquainted, and learn more of the new system keeping in mind the constraints that are faced and will be faced by the Colleges of the State especially the rural colleges where there is lack of manpower and infrastructure. The resource persons were Prof K.G.Bhattacharyya of Gauhati University and Dr L.Cajee of NEHU. In a step to bring reforms in Education system, recently the UGC had uploaded a template draft of the syllabi for different streams under Choice-Based Credit System (CBCS) and with the implementation of the Semester Programmes in UG Colleges it is imminent that sooner or later the new system of CBCS will be adopted in UG Colleges.

Shillong College in the last five years had also organized a number of Seminars, Conferences, Workshops at the national as well as international level, some have been listed below

ACADEMIC PROGRAMMES IN LAST FIVE YEARS

2010 Events

- National Symposium on **the Great Depression of 1930s and the present global economic meltdown :the commonalities and lessons thereof** organized by Shillong College Academic Society , on 25th and 26th June 2010
- 29th General Conference of Meghalaya College Teachers' Association held in Shillong College on 25th September 2010
- World Habitat Day Program on the theme '**Better City, Better Life**' held in collaboration with DHTE, Government of Meghalaya on 4th October 2010

2011 Events

- One day Programme on '**Importance of Mathematics and its various applications**' organised by Department of Mathematics on 7th May 2011.
- Workshop cum Training programme on **Mushroom Cultivation** organised by Department of Botany and Microbiology, Shillong College on 7th and 8th December 2011.
- One day programme on **Domestic violence on Women and atrocities on women and children**' organised by Women Cell, Shillong College on 16th December 2011

2012 Events

- Inauguration and Formation of Youth Red Cross Society on 16th May 2012
- Inauguration and Establishment of Entrepreneurship Development Cell on 8th June 2012
- Release of Book entitled '**Global Financial Crisis-Implications and Repercussions**' on 15th September 2012, a proceeding of National Symposium held in June 2010.
- Release of Book authored by Dr A.Nongbri on 21st December 2012

2013 Events

- National Seminar on **Convergence of Accounting Standards** organized by Department of Commerce on 24th and 25th May 2013.
- Inauguration of **Three Months Certificate Course in Entrepreneurship Development** organised by EDC, Shillong College on 27th May 2013.
- National Seminar on '**Mathematics –the need of the hour**' organized by Department of Mathematics on 5th July and 27th August 2013 to commemorate the National Year of Mathematics
- A Translation Workshop on **Functional Hindi** on 12th July 2013

SECTION II



- Workshop on **Real Life on Reel** organized by Departments of Hindi and Garo on 19th August
- Students' Science Seminar on ' Science, Technology and Meghalaya : 40 years now and 40 years hence' held on 26th July 2013
- International Seminar on **Attracting Best Talents in Basic Sciences** organized by the Academic Committee for Golden Jubilee of Teaching Science on 24th and 25th July 2013.
- A two-day **Science Exhibition** organised by Shillong College on 26th and 27th July 2013 as part of Golden Jubilee of Teaching Science in Shillong College.
- Popular Talk on **General Public Perception and Realities about Atomic Energy**' organised by Shillong College on the 26th July 2013 as part of Golden Jubilee of Teaching Science in Shillong College.
- Popular Talk on **Space Technology for the benefit of North Eastern Region**' organised by Shillong College on the 26th July 2013 as part of Golden Jubilee of Teaching Science in Shillong College.
- Popular Talk on **Cosmic Connection**' organised by Shillong College on the 26th July 2013 as part of Golden Jubilee of Teaching Science in Shillong College.
- Innovative Programme for the retired teachers of Science stream organised by Alumni, Shillong College on 29th July 2013 as part of Golden Jubilee of Teaching Science in Shillong College.
- Inter-College Science Seminar organized by Department of Physics on 3rd December 2013.
- Popular Talk on **Human Trafficking** organized by Women Cell on 1st November 2013
- Interactive Program on **Basic Sociological Concepts** organized by Department of Sociology on 25th November 2013

2014 Events

- Training Program on **Capacity Building for Freshwater Ecosystem Conservation in North East India** organized by Shillong College in collaboration with Florida International University, Miami from 14th to 21st July 2014.
- **Panel Discussion on Juvenile Delinquency**, a memorial lecture organized by Department of Political Science and Department of Sociology on 4th November 2014
- **Computer Literacy Programme** for Non-teaching staff organised by Department of Computer Science from 15th September 2014.
- One Day Workshop on '**Statistics for Knowledge Exploration**' organised by Department of Statistics, Shillong College on 13th September 2014.
- National Seminar on **Emerging Trends in Advanced Networking and Cloud Computing**' organised by Department of Computer Science on 31st October and 1st November 2014.
- **Discourse on Emotional Intelligence-why it matters** organized by Department of Education on 10th November 2014.
- Guest Lecture on **Drain of Wealth and Rise of Economic Nationalism** organized by Department of History, Shillong College on 17th November 2014.

- ❑ National Seminar on ‘**Translation : Transcending Barriers**’ organised by Literary Circle ,Shillong College from 20th to 22nd November 2014.
- ❑ Workshop on **Philosophy and its relevance on the contemporary society** organized by Department of Philosophy on 6th December 2014.
- ❑ Regional Workshop on ‘**Youth and Entrepreneurship**’ organised by EDC, Shillong College on 10th and 11th December 2014

2015 Events

- ❑ National Workshop on **Creative Writing in English** organized by Department of English in collaboration with North East Writers’ forum on 21st and 22nd May 2015
- ❑ Department of Political Science of the College in collaboration with IQAC organised the Second Prof. S. C. Datta Memorial Lecture on 10th June, 2015 on ‘**Politics of Vision versus Politics of Opportunism.**’
- ❑ Invited Talk on **Choice Based Credit System : Challenges and Prospects**’ organized by Academic Sub-Committee for NAAC Re-Accreditation, Shillong College on 13th August 2015
- ❑ National Seminar on ‘**Goods and Service Taxes in India —A Way Forward**’ was organized by The Department of Commerce and The Dept of Management ,Shillong College Shillong in collaboration with Indian Accounting Association, Meghalaya Chapter on 20th-21 August 2015
- ❑ National Seminar on **Recent Advances in Chemistry in service of mankind organized by Department of Chemistry**, Shillong College on 30th and 31st July 2015.
- ❑ Interactive Program on **Research and Innovation in Undergraduate Colleges** organized by Research & Publication Cell, Shillong College on 16th October 2015.
- ❑ Release of Book entitled ‘**Venturing into Research & Innovation**’ published by Research & Publication Cell, Shillong College on 16th October 2015

2016 Events

- ❑ Inauguration and opening of study center on **Institute of Company Secretaries** in Shillong College on the 26th February 2016
- ❑ Release of Book entitled ‘**Reasserting Basic Sciences**’ on 26th February 2016, a proceeeding of the International Seminar on Attracting Best Talents in Basic Sciences held in July 2013
- ❑ Release of Book entitled ‘**Few Newer Perspectives**’ on 26th February 2016, a proceeding of the National Seminar on **Emerging Trends in Advanced Networking and Cloud Computing** held in November 2014.
- ❑ **Invited talk** delivered by Prof.H.P.Roy Choudhury organised by Department of Chemistry, Shillong College on 7th March 2016
- ❑ One Day Awareness Programme on **Adolescents Rights : A Critical agenda**’ organised by Department of Sociology and NCC Unit, Shillong College and Sponsored By NHRC, New Delhi on 15th March 2016.

MAIN PUBLICATIONS OF THE COLLEGE

1. Global Financial Crisis - Implications And Repercussions, ISBN Publication, 2012 (ISBN: 978-93-80261-669).
2. Proceedings of Workshop on 'Mushroom Cultivation' organised in the college on 8th and 9th November, 2011. 10.2012
3. Women's Wide Canvas –Issues and Challenges. ISBN:978-93-83252-45-9, 2015.
4. Proceedings volume of Regional Workshop on Entrepreneurship Development: Opportunities & Challenges in the North Eastern Region held on 8th June, 2012.
5. Process of Standardization of Khasi Language by Dr (Mrs.) Ailynti Nongbri, 2012, published by Ri Khasi Book Agency, Shillong, and released on 21st December, 2012
6. Fundamental of Insurance & Risk Management Dr. Sankar Sarma and Ajay Mitra -Global Publishing House (India), ISBN: 978-93-81563-18-2 (PB); ISBN 978-93-81563-19-9 (HB), 2013.
7. Thought and Reality –A Critical Study of Hegel's Philosophy–2013 by Dr. K. D. Ramsiej ISBN-13: 978-81-8069-955-9 and published by Concept Publishing Company (P) Ltd., New Delhi 110059 and released on 19th May 2013
8. Business Environment by Dr. (Smt.) E. Kharkongor Taxman Publications Pvt. Ltd. ISBN: 978-81-7194-784-3, (2013
9. Reasserting Basic Sciences by Dr M.N. Bhattacharjee & others.a proceeding of the International Seminar on "Attracting Best Talents in Basic Sciences" held on 30th and 31st July 2015.
10. Few Newer Perspectives ISBN : 978-93-83252-80-0-,a proceeding of the UGC-sponsored National Seminar on "Emerging Trends in Networking and Cloud Computing" held on 31st October and 1st November, 2014 at Shillong College, Shillong .
11. Exploring and Interfacing Chemistry for Human Welfare (under ISBN Publication), a proceeding of the National Seminar held on 30th and 31st July, 2015, Shillong College, Shillong

RESEARCH PAPERS/ARTICLES OF THE TEACHING FACULTY OF THE COLLEGE PUBLISHED IN BOOKS/JOURNALS IN THE LAST FIVE YEARS (2011-15)

SCIENCE STREAM PUBLICATIONS

List of publications of Dr M.N.Bhattacharjee

1. Create Environment for Innovation, not Enforce , Seminar Book under ISBN Publication 2016
2. Trade Union Movements in Present Era and Our Education System, Souvenir - All India Rural Bank Employees Association in its All India Conference, December, 2014

List of publications of Dr D.L.Buam

1. Towards making things small : the Nanotechnology, International Year of Chemistry Booklet 2011
2. Present Global Environmental Issues call for a new look on Ethics and Social Responsibility, Climate Change : Environment Impact, 2011 ISBN 978-81-8370-301-7I, p104-113, Akansha Publishing House

3. Transforming Large masses into the Digital Generation, **ICT in Education**, 2011, ISBN 978-93-80261 91 1, p 234-241, **Eastern Book House Publishers**.
4. Changing the mindset and Reversing the Trend back to Basic Sciences, **Reasserting Basic Sciences**, 2016, ISBN 978-93-83252-p 231-234, **Eastern Book House Publishers**

List of publications of Dr C.Masharing

1. Diarganotin(IV) complexes of polyaromatic azo-azomethine ligand derived from salicylaldehyde and ortho-aminophenol: Synthesis, characterization, and molecular structures. Smita Basu · C. Masharing, Babulal Das, Heteroatom Chemistry Wiley Publication: Volume 23, Issue 5, p 457–465, 2012

List of publications of Dr B.M.Laloo

1. 'Recent Development in the synthesis and application of three and four membered ring heterocycles; A Review'; Badaker M. Laloo, Pushpak Mizar, Bekington Murboh. **Current Organic Chemistry**; 2011, 15, 647-656.
2. 'L-Proline as an efficient catalyst for the multicomponent synthesis of 6-amino-4-alkyl/aryl-3-methyl-2,4-dihydropyrano [2,3-c] pyrazole-5 carbonitriles in water'; **Tetrahedron Letters**, Hormi Mecadon, Md. Rumum Rohman, Iadeishisha Kharbangar, Badaker M. Laloo, Icydora Kharkongor, Mantu Rajbangshi, Bekington Myrboh 2011, 52, 3228-3231
3. One-Pot Synthesis of Unsymmetrical Benzils by Oxidative Coupling Using Selenium Dioxide and *p*-Toluenesulfonic Acid Monohydrate'; **European Journal of Organic Chemistry**. Badaker M. Laloo, Hormi Mecadon, Md. Rumum Rohman, Iadeishisha Kharbangar, Icydora Kharkongor, Mantu Rajbangshi, Rishanlang Nongkhlaw, and Bekington Myrboh 2012, 320-328.
4. Reaction of Selenium Dioxide with Aromatic Ketones in the Presence of Boron Trifluoride Etherate: A Protocol for the Synthesis of Triarylethanones'; **The Journal of Organic Chemistry**, 2012, 77, 707-712.
5. A convenient one-pot three component synthesis of 1,4-dihydropyridines using basic alumina as a catalyst in aqueous media under microwave irradiation'. Mantu Rajbangshi, Badaker M. Laloo, Bekington Myrboh. **Organic Chemistry. An Indian Journal**, 2012, 8 (6), 206-210.
6. Synthetic Developments in Functionalized Pyrano[2,3-c]pyrazoles. A Review; **Organic Preparations and Procedures International: The New Journal for Organic Synthesis**, 2013.

List of publications of Dr L.M.Jyrwa

1. Physico-chemical and bacteriological analysis of river Umkhrah, Shillong, Meghalaya, India, ISSN 2249-9695, December 2013
2. Influence of increased environmental water salinity on gluconeogenesis in the air-breathing walking catfish, *Clarias batrachus* – February 2011
3. Cytotoxicity and Genotoxicity Effects of a Neem Based Pesticide, Neemastra on Meristemic Cells of *Allium Cepa*, International Journal of Recent Scientific Research, Vol. 5, Issue 11, pp 2141-2145, November 2014.

List of publications of Dr E.M.Pala

1. Scanning electron microscopy of the scales of a fresh water fish, *Channa gachua* inhabiting a North-East Indian hill stream contaminated by municipal wastes and other pollutants. *Journal of Advanced Microscopy Research*, 2013, 8, 21-26.
2. Ultrastructural deformities in the gills of a fresh water fish, *Channa gachua* inhabiting a North-east Indian hill stream, Umkhrah, contaminated by municipal wastes. *The Journal of Toxicology and Health Photon* 2014, 104, 369-380.

List of Publications of Dalari Lyngdoh, Department of Botany

1. Enumeration and threat status of wild edible fruits in Mawsynram Community Development Block, Meghalaya, India, NeBIO, *International journal of environment and biodiversity*, Vol. 5, No. 2, April 2014, 13-19 ISSN 2278-2281 (Online Version) ISSN 0976-3597 (Print Version)
2. Minor fruits used by locals of two hill districts of Meghalaya, North East India, *Asian J. Pharm Biol Res* 2015, ISSN: 2231-2218 p1-11

List of Publications of Darina Kharshandi

1. Enumeration and threat status of wild edible fruits in Mawsynram Community Development Block, Meghalaya, India, NeBIO, *International journal of environment and biodiversity*, Vol. 5, No. 2, April 2014, 13-19 ISSN 2278-2281 (Online Version) ISSN 0976-3597 (Print Version)
2. Minor fruits used by locals of two hill districts of Meghalaya, North East India, *Asian J. Pharm Biol Res* 2015, ISSN: 2231-2218 p1-11

List of publications of Dr M.B.Lyner

1. Growth pattern, production and marketing of *Thysanolaena maxima* (Roxb.) Kuntze: An important non-timber forest product of Meghalaya, India. *Forest Trees and Livelihood* 2012, 21(3):176-187.
2. Contribution of Forests and Forest Resources in the Economy of Meghalaya. In: Behera, M.C (Ed), *Northeast and Globalisation: Issues Betwixt and Between*. DVS Publishers, 2013.
3. Plant diversity and phytosociological attributes in Shillong College Extended Campus, Shillong, NeBIO, *International journal of and biodiversity*, Vol. 6, No. 4, December 2015, 19-25, ISSN 2278-2281

List of Publications of Dr I.Lyngdoh

1. Colonization of arbuscular mycorrhizal fungi in moderately degraded sub-tropical forest stands of Meghalaya, Northeast India. *Journal of Agricultural Technology* 2011, Vol. 7(6): 1673-1684.
2. Impact of coal mine drainage on water quality and microbial ecology of streams in Jaintia hills, Meghalaya. *International Journal of Current Research* 2012, Vol. 4. (02): 002-007.
3. Physico-Chemical and Bacteriological Characteristics of Umiam Lake, Meghalaya, India. *International Journal of Advanced Life Sciences* 2012., Vol. 3: 27-34.

List of Publications of Dr A.Lyngdoh:

1. First report of two wood-rotting fungi, *Cyclomyces fuscus* and *Humphreya coffeatum*, from India. **Journal on New Biological Reports** 2014.,3(1): 25 – 28.
2. Wood-rotting fungi in East Khasi Hills of Meghalaya, northeast India, with special reference to *Heterobasidion perplexa* (a rare species new to India). **Current Research in Environmental & Applied Mycology** 2014., 4 (1): 117–124.

List of Publications of Dr S.Khongwir

1. Physico-chemical and bacteriological analysis of river Umkhrach, Shillong Meghalaya, India. **International J. Environ. Sci. Tech** 2014, 4(1):1-5

ARTS STREAM PUBLICATIONS

List of publications of Dr K.D.Ramsiej

1. Book entitled, 'Thought and Reality: A Critical Study of Hegel' (2013).

List of publications of Ms V.R.Solomon

1. Women's Political Participation in Meghalaya Legislative Assembly From 1972 to 2008, Women's Wide Canvas: Issues and Challenges; EBH, Publishers, ISBN: 978-93-83252-45-9,p.

List of publications of Dr (Mrs) S.Pandey

1. Co-author of book titled 'Purvottar ki Sanskritic Pahchan' published by Manav Prakashan, Kolkata in 2011 ISBN: 978-93-80332-13-0
2. Co-author of book titled 'Tat Par Pratiksha' a translation of poems by Padmashree Prof Temsula Ao, published by Sahitya Akademi in 2012 ISBN: 978-81-260-3238-9
3. Meghalaya ka sanskritic paridrishya published in Samanvaya purvottar, a journal of Central Institute of Hindi in January-March, 2011.
4. 'Svatantrata Sangram ke Agradut U Tirot Sing' published in NEHU Journal,2011, VOL IX, no 1 ISSN-0972-8406
5. Translation of Kynpham Sing Nongkynrih's poem published in Samanvay Purvottar, a journal of Central Institute of Hindi, in April- June 2011. ISSN-2231-6132
6. 'Purvottar Bharat aur 1857 ka Vidroh' published in Samanvay Purvottar, a journal of Central Institute of Hindi, in July-September, 2011 ISSN-2231-6132
7. 'Exploring The Canon: A Study of Post Colonial Women Novelists in Hindi' published in the book titled 'Gendered India', published by Booksway, Kolkata ISBN:978-93-81672-00-6
8. 'Purvottar bharat mein kisan aandolan', published in Abhinav Kadam, Mau, U.P., 2012 .ISSN;2229-4767

9. 'Assam ke upakshit jan ki aavaz Indira Raysam Goswami' published in Samanway Purvottar ,a Journal of Central Institute of Hindi ,in Jan - Mar, 2012 ISSN 2231-6132
10. 'Garo ka Sanskritik Paridrishya', published in Samkalin Bharatiya Sahitya , Sahitya Akademi, November – December, 2012 ISSN 0970-8367
11. Translation of Padmashree Prof Temsula Ao's poem published in Samanway Purvottar , July – December 2012 ISSN 2231-6132
12. Svatantrata sangram ke agradut published in Sahitya Vimarsh , an International Research Journal , in Jan – June 2014 ISSN : 2319 -9008

List of publications of Dr D.Bhowmick

1. Ancient Architecture :Impressive,Imperishable and Inimitable, *Asian Journal of Multidisciplinary Studies* vol II Issue 5,May,2014 ISSN:2321-8819(Online)2348-7186(Print)Impact Factor:0.923(JIF)
2. Nihilism and Post Modernism:Is Gauri in Jhumpa Lahiri's *The Lowland* a Victim of Nihilism in LITT CRIT December Issue 2014
3. Cultural Alienation in Upamanyu Chatterjee's *English, August* in LITERARY CRITERION Vol.XLIV.1 2009
4. Edward Said and Post colonial Feminism , *Women's Wide Canvas : Issues and Challenges* December 2014,EBH Publication.

List of publications of Dr (Mrs) E.Kharkongor

1. Trends and Pattern of Social Sector Expenditure in Meghalaya: An Analysis, in Proceedings Volume, 14th Annual Conference of the North Eastern Economic Association, 13th to 15th December, 2012 organized by Department of Economics, Sivasagar College, Joysagar, Assam. (under ISBN publication).
2. Entrepreneurship Development: Opportunities and Challenges in the North Eastern Region, (co-editor); Proceedings Volume, Regional Workshop on 08th June, 2012, Entrepreneurship Development Cell, Shillong College, Shillong.
3. Sustainable Development through Community Participation: A Case Study of Mawlyngot Village; International Seminar on "Green Economics: The Road to a Balanced and Healthy Economy", Meghalaya Economic Association in collaboration with Rajiv Gandhi Indian Institute of Management, Shillong: 07th & 08th August, 2014. (under ISBN publication).
4. The Dynamics of Migration: Its Implications on Urbanization with special reference to Meghalaya, International Seminar on "Human Migration in South Asia: Dynamics and Implications", organized by IQAC, Synod College, Shillong, 9th—10th October, 2014, Synod College, Shillong. (under ISBN publication).
5. Waste to Wealth: An Analysis of Opportunities and Challenges in Meghalaya (co-author): Regional Seminar on Resource Potentialities and Economic Prosperity: Challenges of the North Eastern Region organized by the IQAC, Sngap Syiem College, Mawkyrwat in collaboration with Meghalaya Economic Association, 14th – 15th May, 2015. (under ISBN publication).

List of publications of Dr(Mrs) D.Mawroh

1. Book on Representation of Women in Khasi Literature

List of publications of Dr S.Khyriemujat

1. Women in the Khasi Matrilineal Society, *Women's Wide Canvass: Issues and Challenges* ISBN-978-93-83252-45-9, p 127-133,2011 (Eastern Book House Publication).
2. Ka Pomblang- A Depiction of Khasi polity in the present day(to be published by Department of Political Science, Synod College, Funded by ICSSR,NEHU).
3. Ka Sain Bri: An Analysis of Tribal Land Management(to be published by Department of History, Synod College).
4. Dynamics of Migration and its implication on Urbanization, with special reference to Meghalaya to be published IQAC,Synod College, Shillong (under ISBN publication).
5. Empowerment of Woman is Empowering Society, published by Department of Sociology St.Edmund College, in the Department Souvenir,2013.
6. Waste to Wealth: An Analysis of Opportunities and Challenges in Meghalaya (co-author): Regional Seminar on Resource Potentialities and Economic Prosperity: Challenges of the North Eastern Region organized by the IQAC, Sngap Syiem College, Mawkyrwat in collaboration with Meghalaya Economic Association, 14th – 15th May, 2015. (under ISBN publication).
7. Tribal Land Management :An Analysis of Ka Sain Bri in the Society, *Understanding Religion :Panoramic View*, ISBN 978-93-83252-78-7, p 36-41
8. Value Education : The Need of the Hour, *Reasserting Basic Sciences*, ISBN- 978-93-83252-79-4, p 2016

List of publications of Smt D.Diengdoh

1. Issues of Social, domestic violence and Women Trafficking in Meghalaya, **Women Empowerment Movement in North East India** , ISBN 81-7117-231-8
2. Women's Education and Gender Sensitisation, **Women's Wide Canvas : Issues and Challenges**, ISBN 978-93-83252-45-9,2015, p

List of publications of Smt K.Sohtun

1. Guide Books for Basic Guidelines of Degree Students with B.B.Publishing House, Arindam Printing Press, Guwahati
2. Women Empowerment and Gender Discrimination in Women's Wide Canvas : Issues and Challenges, ISBN 978-93-83252-45-9

List of publications of Smt A.Lyngdoh, Department of Sociology

1. Mother's Brother in Matrilineal Societies : A Study of Khasi Matriliney ,NEHU Journal, Vol XIII, No 1, Jan-June, 2015

List of publications of Dr A.Nongbri

1. Book on 'Process of Standardisation of Khasi Language

List of publications of Mr P.Pyrtuh

1. The Ethnopolitic of Ethnicity in North East India, **The Political Anvil**, Vol.1 No.1. ISSN No.2319-7528, December 2012
2. Women Empowerment through Political Representation in Matrilineal Meghalaya, **The Political Anvil**, Vol.2 No.1. ISSN No.2319-7528, December 2013
3. Contractual Theory of the Firm: An Institutional Approach to Outsourcing Process, **Keanean Journal of Arts**, Vol-1 2013. ISSN 2348-1110
4. Mawkhroh, Iabitnam & Phrangngi Pyrtuh "Development: A Paradox of Women Empowerment in Meghalaya" in R. P Vadhera "**Development of North East India: Multidimensional Perspective : Vol.1, First Edition 2015**, Published by Manglam Publishers & Distributors, New Delhi, ISBN 978-93-82816-20-1

List of publications of Mr P.Shabong

1. Ka Jingieit bad Jingthrew Ka Doh: Ka jingbishar bniah halor ka parom UKlew bad ka Sngi. Don Bosco Press. Shillong 2011.
2. Namar Ka Ri Ngan tur (Drama), Vanrica Press, Mawkhar, Shillong 2013.

COMMERCE STREAM PUBLICATIONS

List of Publications of Dr S.Sarma

1. Sensex Volatility and Household Investors: A study of the market Crash and Global Financial Crisis." **Global Financial Crisis**. Edited by M.N. Bhattacharjee, Sankar Sarma and others, 2012. EBH Publisher (India), Guwahati. ISBN: 978-93-80261-66-9.
2. "Regional Rural Bank and its Role in Finance Inclusion: A case study of Meghalaya." **Financial Inclusion for Inclusive Growth**. Edited by A. Rajmani Singha, 2013. Concept Publishing Pvt. Ltd. New Delhi. ISBN: 13: 978-81-8069-968-9.
3. "Indian Retail Sector and FDI Prospects and Problems." **Impact of Foreign Direct Investment In India**. Edited by Dr. Subrata Mukherjee, 2013. Manav Prakashan Kolkata. ISBN: 978-93-80332-44-4
4. "Problems and Prospects of Tourism Industry in the State of Meghalaya – An Overview" **Tourism Industry in North East India**. Edited by Dr. RAjmani Singh and Prof. GP. Prasain, 2014. Akansha Publishing House, New Delhi. ISBN : 978-81-8370-4045.
5. Book entitled **Fundamentals of Insurance & Risk Management**. Global Publishing House, Guwahati- 3, ISBN: (PB) 978-93-81563-18-2. : (HB) 978-93-81563-19-9.

INNOVATIVE ACTIVITIES OF THE COLLEGE

UGC-SPONSORED CERTIFICATE COURSE

- Entrepreneurship Development Cell

The EDC recognized that a more concerted effort was needed to incorporate entrepreneurial dynamism especially amongst the educated youths, and this can be facilitated through entrepreneurial courses and training. Keeping in mind that one of the main objectives of the Cell is to organize Certificate or Diploma Courses that will serve as an added advantage for the unemployed youths for self employment, the task for fulfilling this objective was taken up. Faculty members of the Cell namely Dr. (Mrs.) E. Kharkongor, Smt. P. Khonglah & Shri. S. Lyngskor then prepared and framed the Syllabus for the Three Months Certificate Course in Entrepreneurship Development. This was submitted to the UGC for approval. The UGC's approval was received and it had also sanctioned Rs 7.00 lakhs (rupees seven lakhs only) as Seed Money for starting the Certificate Course (UGC's Letter dated 31st March, 2013). Hence, the task for conducting the

UGC Sponsored Three Months Certificate Course in Entrepreneurship Development Course was started by the Cell.

On 27th May, 2013, the UGC Sponsored Three Months Certificate Course in Entrepreneurship Development commenced. Expert resource persons and trainers were identified and drawn not only from the college but from different organizations, government departments, industries and financial institutions such as KVIC, KVIB, SBI, MIDC, DHHDC, DIC, Bethany Society, Polaris Solutions Enterprise, LIFCOM, Taxation Department, Tourism etc. Prominent and successful entrepreneurs of the state were also invited for interactions and deliberations which enhance the practical significance of the course. The training imparted was mainly based on a practical approach towards entrepreneurship development and there was greater interaction and discussions amongst the resource.

FRAMING THE SYLLABUS OF THE CERTIFICATE COURSE IN ENTREPRENEURSHIP

- Entrepreneurship Development Cell

The task of Framing the Syllabus of the Certificate Course in Entrepreneurship was taken up by three members of the Cell comprising of Dr. (Mrs.) E. Kharkongor, Mrs. P. Khonglah & Mr. S.O. Lyngskor. The Course was approved under UGC Scheme of Career Oriented Courses and started in the college from the academic year 2013 – 14. The Course Syllabus was submitted to Meghalaya Institute of Entrepreneurship and it is noteworthy that the Meghalaya Institute of Entrepreneurship pro-

pose to replicate the initiative of the College and establish such Entrepreneurship Development Centre's (EDC's) in every district of the State to attract educated youths in skill development learning and venture into entrepreneurial pursuit (Letter dated 13th June, 2014). The commitment to generate employment opportunities and the growing demand for a more cohesive programme that will educate and strengthen the capability of the educated youth to become dynamic entrepreneurs have en-

couraged the management and the EDC to explore the possibilities for the introduction of the Entrepreneurship Course at the Post Graduate Level. On June 2014, the Entrepreneurship Development Cell was assigned the task of framing the Course Syllabus of *Masters in Entrepreneurship*. This task was taken in right earnest by a team of committed and

dedicated faculty members comprising of Dr. (Mrs.) E. Kharkongor, Mrs. P. Khonglah, Dr. S. Sharma, Mr. T. Warjri, Mrs. A. Basaiawmoit, Ms. I. S. Khyriem and Mr. S.O. Lyngskor. The draft Syllabus of *Masters in Entrepreneurship* has been submitted to the Principal, Shillong College on September 2014 for necessary action.

COMMUNITY COLLEGE

- Entrepreneurship Development Cell

The Cell collaborated with faculties from the Departments of Micro Biology and Environmental Sciences, relevant Government Department & other agencies in preparing and framing the Syllabus for Certificate & Diploma Courses with EDP Inputs in Food Processing & Waste Management. This is proposed to be started by the institution under UGC Guidelines for Com-

munity Colleges, the proposal is made for 2 vocational courses that can be pursued viz, Food processing & solid waste management (certificate and Diploma course respectively). The Department of Microbiology has been assigned in framing the syllabus and budget for food processing and the Department of Environmental Science for Solid Waste Management

CHOICE-BASED CREDIT SYSTEM : CHALLENGES AND PROSPECTS

- Academic Sub Committee

The Ministry of Human Resource Development (HRD), Govt. of India, has already initiated the process for developing New Education Policy (NEP) in our country to bring out reforms in Indian education system. In this connection, the UGC has already initiated steps to bring equity, efficiency and academic excellence in National Higher Education System. In a step to bring reforms in Education system, recently the UGC had uploaded a template draft of the syllabi for different streams under Choice-Based Credit System (CBCS) and with the implementation of the Semester Programmes in UG Colleges it is imminent that sooner or later the new system of CBCS will be adopted in UG Colleges. With this view, the Academic Sub-Committee, for NAAC Reaccreditation, Shillong College had organized a one day Programme on 'Choice-Based Credit System : Challenges and Prospects' on

the 13th August 2015 so as to enable all stakeholders in education system to get acquainted, and learn more of the new system keeping in mind the constraints that are faced and will be faced by the Colleges of the State especially the rural colleges where there is lack of manpower and infrastructure.

The UGC is of the opinion that the grading system is considered to be better than conventional marking system as the uniform grading system will facilitate students' mobility across institutions and to be able to assess the performance of students. He further added that in CBCS, two consecutive semesters constitute one Academic year in which one Semester will consist of 15-18 weeks of academic work. The CBCS provides choice for students to select from the prescribed courses and the course work is measured in terms of number of credits where one credit is equivalent to one hour of

lecture or tutorial or two hours of practical work after which the Grade Points are being calculated. For each semester, Semester Grade Point Average (SGPA) is calculated as the ratio of total Credit points secured and the total course credits taken during that semester. The overall performance of a student is measured in terms of Cumulative Grade Point Average (CGPA). These will be reported in the transcripts for each semester and a consolidated transcript indicating the performance in all semesters. Few

suggestions for the effective implementation of CBCS are mentioned as to reduce class size, to improve student-teacher ratio, to appoint teaching assistants to assist the teacher in assessment and tutorials, that the examination questions should be conceptual and test the understanding level of students, to introduce mentorship to guide students with problems, to encourage self study for certain topics and to improve the facilities by providing laptops, projectors, collar mikes and PA system in every classroom.

CAPACITY BUILDING FOR FRESHWATER ECOSYSTEM CONSERVATION IN NORTHEAST INDIA

– Shillong College & Florida International University

Shillong College, Meghalaya in collaboration with Rufford Foundation for Nature Conservation UK; Global Water for Sustainability Program, Florida International University, USA and Foundation for Ecological Research, Advocacy and Learning, Pondicherry, India is organizing a Training Program on “Capacity Building for Freshwater Ecosystem Conservation in Northeast India” from 14th – 21st July, 2014 for undergraduate students from different fields of science. The program aims to train a new generation of students in methods and tools of watershed monitoring and analysis with an understanding of the principles of watershed ecohydrology that can empower students to play greater roles in their communities in monitoring the health of local ecosystems. This program pioneers conservation education in the Indian Northeast and will also initiate developing a field guide to aquatic macro-invertebrates of Meghalaya that can be used for stream biomonitoring. Additionally, the program can also prepare interested students for further education in fields specific to conservation and resource management, amid increasing demands, pressures and uncertainty in water availability due to climate change. These skills together with their traditional knowledge can enable designing and implementing realistic conservation

strategies at different levels, from governance to research to community participation.

The North East India is known world over for its immense biological and cultural diversity. Being a tribal dominated society closely woven with nature, the region has rich forest cover and watersheds which renders innumerable ecological services to its people. Local communities have had a long tradition of protecting forests by designating sacred groves and using resources sustainably. Today, however, globally increasing natural resource demands, development pressure and climate change pose new challenges towards watershed ecosystem conservation. Forest degradation, severe river pollution and water shortages over the dry summer are widespread in Meghalaya. Conserving habitat, biodiversity and ecosystem services amid escalating multiple-use and often conflicting demands require a catchment-level perspective along with techniques of hydrological, ecosystem and landscape monitoring/analysis. However, there are no educational courses in the entire North-east Indian region that impart such skills, and most students are financially unable to leave the region. Neither is there a citizen-science method to monitor the health of aquatic ecosystems.

FORMATION OF A BIOMONITORING CELL IN SHILLONG COLLEGE

Science Stream

With the conclusion of the training course on **Capacity Building for Freshwater Ecosystem Conservation in Northeast India** from 14th -21st July 2014 in Shillong College, Meghalaya, co-sponsored by Rufford Foundation, UK and Shillong College, Meghalaya, the Biomonitoring Cell has been constituted on the 21st July 2014. Biomonitoring is a method of assessing water quality by examining the aquatic macroinvertebrates, such as insect larvae, snails, and worms. The presence of certain families of macroinvertebrates is correlated with physical characteristics of stream ecosystems and water quality. However no such biomonitoring guide or correlation between macroinvertebrates and water quality exists in the Indian northeast. The biomonitoring network aims to collect information on as many streams as possible where data on water quality, the physical parameters of streams and stream macroinvertebrates

will be collected by students with the guidance of professors and a field guide can be compiled and published as a pdf document. Students will get invaluable research and field experience, and the experience of working independently as an independent professional. This could be a great opportunity for colleges as well to obtain for research funding that will enhance quality of their labs and bring additional funding for research and professional development of students and faculty members. In this program first of its kind, the students learned techniques for monitoring chemical and physical parameters of streams such as flow rates, stream discharge, dissolved oxygen and turbidity. Students also learned to identify aquatic macroinvertebrates to the family level based upon the external features of the larvae. Students also received training in QGIS, an open source GIS software to analyze and display spatial data and making maps.

BIO-MONITORING – AN INTERDISCIPLINARY PROJECT

(Arising out of the Training Program on Ecosystem Conservation held in Shillong College)

A BRIEF REPORT ON THE STUDY OF THE WATER QUALITY IN UMKALIAR AND LWAI STREAM, East Khasi Hills District, Meghalaya

*Lucy Mary Jyrwa, ²Pynbitbha Rynjah, ³Banridor Kharbyngar, ²Bakorshisha Kharjana, ¹Jane Kharbuddon, ¹Bamaian Pariong, ³K.Ramtawon L.Nonglait, ⁴Teiborlang Kurbah, ⁴Spyningstar Wahlang, ³Willaim Sangma, ¹Sebastian syngkli, ¹Biba Jana, ²Barikupar Paswett, ¹Banri Dohling and ¹Shanwell Khongwir.
¹Department of Zoology, ²Department of Botany, ³Department of Microbiology, ⁴Department of Chemistry, Shillong College

Umkaliar stream have high anthropogenic activities along its bank and during field work for one year it was observed that there was a permanent anthropogenic activity. Sewage was observed to be directly release in to the stream from the houses. Washing of clothes and vehicles were seen to take place almost every day. Unlike Umkaliar stream, Lwai stream is far from human impact making it

still pollution free. Thus, it can be concluded that due to anthropogenic activity there is a change in composition in both physico-chemical and biological properties in Umkaliar stream which indicates water pollution as compared to Lwai stream.

Shillong lies on the deeply dissected Meghalaya Plateau which runs in an East West direction. The greater Shillong area is bound by the coordinates of

25°32'10'' N to 25°36'20'' N latitude and 91°51'30'' to 91°51'30'' E longitude. The uppermost part of this area is a mildly undulating plateau top with an altitude of 1900 m as the highest points being the Shillong peak (1964m) and the Laitkor peak (1960m). The field study that is being taken up for this study is the Wah Umkaliar which belongs to the upper zone of the Umkhrah Stream System and originates from Spread Eagle Waterfalls, located 3 kms from Umkhrah Stream. By identifying the relative abundances of species that are tolerant of pollution versus species that are intolerant of pollution, the bio monitoring program gains valuable information about the impact of pollution and habitat disturbance on rivers, streams and wetlands of Meghalaya. Various anthropogenic activities like encroachment, sand mining, direct sewage dumping has occur along Umkhrah Stream system causing stress to the biota of stream, it thus becomes important to identify and study whether the upper zone of the stream system is also affected by the human activities or is the water quality of wah Umkaliar still fit to be called clean. For control, another stream called the Lwai stream was taken in order to compare the parameters as well as macro-invertebrates. This stream is situated at

Thangsning Village, 22 kms away from Shillong. This stream is use for drinking purpose as huge iron pipelines are seen. Other than that the stream seems to be free from anthropogenic activities. The results clearly indicates the physico-chemical parameters such as colour, turbidity, dissolved oxygen, nitrate content, fluoride content, etc between the two streams. It was further observed that the macroinvertebrates inhabiting Umkaliar stream were pollution tolerant. However, dead fish was found in this stream. In Lwai stream, macroinvertebrates which are pollution sensitive (i.e. residing in clean water) were found to be more dominant. Umkaliar stream have high anthropogenic activities along its bank. During the field for one year it was observed that there was a permanent anthropogenic activity. Sewage was observed to be directly release in to the stream from the houses. Washing of clothes and vehicles were seen to take place almost every day. Unlike Umkaliar stream, Lwai stream is far from human impact making it still pollution free. Thus, it can be concluded that due to anthropogenic activities there is a change in composition in both physico-chemical and biological properties at Umkaliar stream which indicates water pollution as compared to Lwai stream.

PLANT SPECIES IDENTIFIED IN SHILLONG COLLEGE EXTENDED CAMPUS AT UMROH

- Department of Environmental Science

89 plant species were recorded from Shillong College extended campus at Mawroh. Out of these, 31 were tree species, 24 shrubs, 15 species of Climbers and lianas and 19 species of herbs.

Tree species with high density are *Itea macrophylla*, *Lyonia ovalifolia* and *Lindera caudata* while *Euryajaponica* and *Viburnum foetidum* contribute maximum density amongst shrubs. *Smilax oxyphylla* recorded the highest density amongst climbers. In case of herbs, *Eupatorium riparium* and *Asplenium* sp has highest density.

**A list of plant species recorded in Shillong College
extended campus, Umroh**

Name of Species

Family

T R E E S

<i>Albizia</i> sp.	Mimosaceae
<i>Beilschmiedia</i> sp.	Lauraceae
<i>Betula alnoides</i> Buch.-Ham. Ex D. Don	Betulaceae
<i>Castanopsis purpurella</i> (Miq.) Balak.	Fagaceae
<i>Castanopsis</i> sp.	Fagaceae
<i>Cyathea</i> sp.	Cyatheaceae
<i>Eurya acuminata</i> DC.	Theaceae
<i>Ficus fistulosa</i> Reinwdt.	Moraceae
<i>Ficus</i> sp. 1	Moraceae
<i>Ficus</i> sp. 2	Moraceae
<i>Helicia robusta</i> Wall. ex. Benn.	Proteaceae
<i>Itea macrophylla</i> Wall.	Iteaceae
<i>Lindera caudata</i> Benth.	Lauraceae
<i>Lithocarpus dealbatus</i> (Hk.f. et. Th.ex Miq) Rehder	Fagaceae
<i>Lyonia ovalifolia</i> (Wall.) Drude	Ericaceae
<i>Manglietia</i> sp.	Magnoliaceae
<i>Michelia</i> sp.	Magnoliaceae
<i>Micromelum integerrimum</i> (Roxb.) Wight & Arn	Rutaceae
<i>Myrica esculenta</i> Buch.-Ham. ex D. Don.	Myricaceae
<i>Pinus kesiya</i> Royle ex Gordon	Pinaceae
<i>Quercus semiserrata</i> Roxb.	Fagaceae
<i>Rhododendron arboreum</i> Sm.	Ericaceae
<i>Rhus acuminata</i> DC	Anacardiaceae
<i>Rhus javanica</i> Linn.	Anacardiaceae
<i>Sauraria</i> sp.	Saurauiceae
<i>Schefflera hypoleuca</i> (Kurz) Harms	Araliaceae
<i>Schima wallichii</i> (DC.) Korth.	Theaceae
<i>Styrax serrulatum</i> Roxb.	Styracaceae
<i>Syzygium</i> sp.	Myrtaceae
<i>Viburnum coriaceum</i> Bl.	Caprifoliaceae
<i>Wendlandia glabrata</i> DC.	Rubiaceae

S H R U B S

<i>Blechnum orientale</i> Linn.	Blechnaceae
<i>Breynia retusa</i> (Dennst.) Alst.	Euphorbiaceae
<i>Butea minor</i> Buch.-Ham. ex Bakr	Fabaceae
<i>Callicarpa rubella</i> Lindl.	Verbanaceae
<i>Desmodium microphyllum</i> (Thunb.) DC.	Fabaceae
<i>Eurya japonica</i> Thumb.	Theaceae
<i>Ficus fulva</i> Reinwdt.	Moraceae
<i>Ficus hirta</i> Vahl.	Moraceae
<i>Ficus heterophylla</i> Linn.	Moraceae
<i>Inula cappa</i> (Buch.-Ham. ex D. Don) DC	Asteraceae
<i>Lantana camara</i> Linn.	Verbanaceae
<i>Mentha longifolia</i> (L) Huds.	Lamiaceae
<i>Musseanda macrophylla</i> Wall.	Rubiaceae
<i>Osbeckia nepalensis</i> Hk. f.	Melastomataceae
<i>Osbeckia stellata</i> Buch.-Ham. ex D. Don	Melastomataceae
<i>Pandanus</i> sp.	Pandanaceae
<i>Phoenix acaulis</i> Buch.-Ham. ex Roxb.	Arecaceae
<i>Polygonum molle</i> D. Don	Polygonaceae
<i>Rubus ellipticus</i> Sm.	Rosaceae
<i>Rubus rugosus</i> Sm.	Rosaceae
<i>Schefflera venulosa</i> (W. & A.) Harms	Araliaceae
<i>Symplocos pyrifolia</i> Wall. ex G. Don	Symplocaceae
<i>Urena lobata</i> Linn.	Malvaceae
<i>Viburnum foetidum</i> Wall.	Caprifoliaceae

C L I M B E R S & L I A N A S

<i>Alyxia</i> sp.	Apocyanaceae
<i>Asparagus racemosus</i> Willd.	Asparagaceae
<i>Desmodium</i> sp.	Fabaceae
<i>Dioscorea bulbifera</i> Linn.	Dioscoreaceae
<i>Ficus</i> sp. 3	Moraceae
<i>Kadsura heteroclita</i> (Roxb.) Craib.	Schisandraceae
<i>Lygodium flexuosum</i> (Linn) Sw.	Schizaceae
<i>Piper griffithii</i> C. DC.	Piperaceae

CLIMBERS & LIANAS

<i>Piper</i> sp.	Piperaceae
<i>Porana racemosa</i> Roxb.	Convolvulaceae
<i>Pueraria lobata</i> (Willd.) Ohwi	Fabaceae
<i>Smilax oxyphylla</i> Wall.	Smilacaceae
<i>Stephania</i> sp.	Menispermaceae
<i>Tetrastigma serrulatum</i> (Roxb.) Planch	Vitaceae
Unidentified sp 4	

HERBS

<i>Asplenium</i> sp.	Aspleniaceae
<i>Begonia roxburghii</i> A. DC	Begoniaceae
<i>Carex baccans</i> Nees.	Cyperaceae
<i>Cautleya spicata</i> (Royle) Baker	Zingiberaceae
<i>Crassocephalum crepidioides</i> (Benth.) Moore	Asteraceae
<i>Curculigo orchoides</i> Gaetrn.	Hypoxidaceae
<i>Cyanotis</i> sp.	Commelinaceae
<i>Dipsacus asper</i> DC.	Dipsacaceae
<i>Emila sonchifolia</i> (Linn.) DC	Asteraceae
<i>Eupatorium adenoform</i> Spreng.	Asteraceae
<i>Eupatorium riparium</i> Regel	Asteraceae
<i>Globba</i> sp.	Zingiberaceae
<i>Gnaphalium affine</i> D. Don	Asteraceae
<i>Hedyotis uncinella</i> Hk. & Arn.	Rubiaceae
<i>Oplismenus compositus</i> (L.) P. Beauv	Poaceae
<i>Sacandra glabra</i> (Thunb.) Nakai	Chloranthaceae
<i>Scutellaria discolor</i> Colebr.	Lamiaceae
<i>Selaginella</i> sp.	Selaginellaceae
<i>Siegesbeckia orientalis</i> Linn.	Asteraceae

TREES



Itea Macrophylla



Schima Wallichii

SHRUBS



Eurya Japonica



Viburnum foetidum

C LIM B E R S

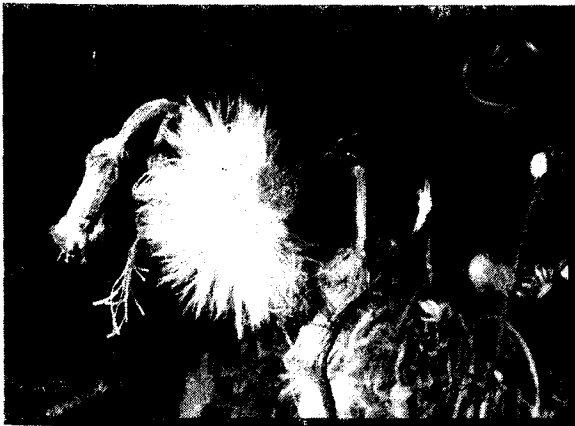


Smilax Oxyphylla



Lygodium Flexuosum

H E R B S



Crassocephalum Crepidioides



Eupatorium Adenoforum

APPLICATION OF A SIMPLE CLUSTERING TECHNIQUE FOR PREDICTION OF STUDENTS' ACADEMIC PERFORMANCE (DATA MINING)

- Department of Computer Science

The ability to monitor the progress of students' academic performance is a critical issue to the academic community of higher learning. In this project, we implemented a Simple Clustering technique for analyzing students' result data. The student's performance plays important role in success of any institution. With the significant increase in number of students and institutions, institutions are becoming increasingly performance oriented and are accordingly setting goals and developing strategies for their achievements. With the help of data mining methods, such as clustering Algorithm, it is possible to discover the key characteristics from the students' performance and possibly use those characteristics for future prediction. By taking on a class 11 Sci-

ence 2015 result of the Shillong College Science students as per the subjects Maths, Physics and Chemistry, the proposed algorithm will be used to analyze the data. In this project, a simple methodology based on a simple clustering algorithm and deterministic model is being used to evaluate the performance of students in institutions. This methodology will assist the academic planners to monitor student's performance during each term. Hence this model will play important role for academic planners to determine the reasons for decline in performance of students during a particular session and steps that need to be taken to improve performance from next academic session. However, this project can be further enhanced according to needs.

SMART KITCHEN

- Department of Computer Science

In today's generation the world is moving towards smarter technology. We moved on from telephone to smartphone and from black and white to smart Television. As human beings we are never satisfied on what is currently available, we are eager to come up with more simpler and advance methods which would make our life simpler as compared to the past.

This project aims to improve our traditional kitchen to a smarter kitchen. To do that, we are going to have a smart container, this container consists of a weight sensor which is attached to the bottom of the container, the sensor is going to read the pressure value of the item placed inside it. These values are going to fluctuate according to the quantity available in it.

The observed value will be sent to an ATmega328 microcontroller (ATmega328 in an programmable interated circuit) in the form of voltage, the micro controller is going to convert these analog into digital values. Moreover, the micro controller is

connected to an Ethernet Shield (Ethernet Shield is a circuit board with a Wiznet Ethernet W5100 microcontroller which helps in connecting the circuit to the internet). Thus we can develop an application in our smart phones which is going to extract this information from the network. By connecting our application to a microcontroller through the network our smartphone apps will provides all the update of the items that we store in the kitchen like sugar, salt, tealeaf and so on. Furthermore, we can configure the Ethernet shield so that it can be access anywhere over the internet. One can also connect our electronic appliance switches to the microcontroller, in doing so we can have another application that will allows us to turn ON/OFF our electronic appliances like fan, light. This mechanism will be of more convenience as compare to the legacy system since every electronic appliances can be remotely control using an application in our smart phones.

UGC-SPONSORED SHORT – TERM COURSES IN FUNCTIONAL HINDI

- Department of Hindi

A series of short term courses in Functional Hindi is being offered by the department. A systematic introduction to the structure of Hindi language is presented to the students in the course. Keeping in mind the problems encountered by the learners in the process of the acquisition of the Hindi language, those aspects of the language are included in the course whose mastery is essential for the development of basic skills and proficiency in the language. The details of the short-term courses conducted by the department are following :-

1. 21st to 26th June, 2010.
2. 4th to 12th October, 2010
(Short –term typing course)

3. 15th to 21st July, 2011.
4. 18th to 25th July, 2012.
5. 1st to 8th August, 2012.
6. 1st September to 15th October, 2012
7. 11th to 18th November, 2013
8. 19th to 26th July, 2014
9. 18th to 23rd August, 2014
10. 25th August to 2nd September, 2014
11. 3rd to 10th September, 2014
12. 11th to 22nd Aug 2015

Name of the Seminar/ Workshop	Year	Organized by the Department of Hindi
1. Translation Workshop on Functional Hindi	12 th July, 2013	Dept. of Hindi & Garo Shillong College
2. Workshop on “Real Life on Reel”	26 th August, 2013	Dept. of Hindi & Garo Shillong College
3. Debate and Recitation competitions	13 th September, 2013	Dept. of Hindi & Garo Shillong College
4. Workshop on Fables in Translation	16 th August, 2014	Dept. of Hindi & Garo Shillong College
5. Inter-College Debate, Recitation and Singing Competition	19 th September, 2014	Dept. of Hindi & Garo Shillong College
6. Workshop on “Reality Bytes”	11 th September, 2015	Dept. of Hindi & Garo Shillong College

STUDY CENTER OF INSTITUTE OF COMPANY SECRETARIES OF INDIA

- Department of Commerce

The Department of Commerce, Shillong College hosted the Investment Awareness Programme organized by North East Chapter of Company Secretaries of India in collaboration with the Department of Management on 10th December 2015, the programme was sponsored by Ministry of Corporate Affairs, Govt of India. The objectives of the programme was to provide information regarding the stock market in India and to encourage and motivate the people to invest in the stock market for the development of our economy. About 150 People from dif-

ferent professions, occupations have attended the programme. The main speaker of the programme was Shri Indranil Barua, Member of the Indian Institute of Company Secretaries of India and Shri Chiranjeeb Sharma Roy, in-charge of the Institute of Company Secretaries of India, NorthEast Chapter. On the 26th February 2016, the Department of Commerce organized the launching of the Study Center of Company Secretaries of India which was inaugurated by the VC, NEHU, Prof Krishna Srivastava in the presence of others guests and academicians.

HERPETOLOGICAL MUSEUM

- Department of Zoology

The herpetological museum was set up in 2009 by the Department of Zoology, Shillong College with the intention to catalogue and diversify the herpetofauna of Meghalaya as knowledge of herpetofauna is still very poor in North East India even though the NE region is a part of Indo-Myanmar Biodiversity Hotspots and supports some of the very unique and rich biota on earth. Collections were made prior to the implementation of new regulation set up by UGC. Identification of specimens was done with the help of a guide book by Ahmed et al., 2009.

The herpetofauna includes the following:

1. Amphibians:- Include anurans (frogs and toads), salamanders and caecilians. Anurans are “tailless” amphibians, most of which undergo a classic metamorphosis during their lifecycle from aquatic tadpoles to terrestrial adults. Salamanders and newts are “lizard-like” animals having an elongated body, slimy skin, short legs and bilaterally compressed tail. They also have a larval stage and dependant on water for that period of lifecycle. Caecilians are limbless amphibians looking like a “worm” or small “snake” and are often specialized for burrowing life.

Some of them have aquatic larvae, while some undergo direct development from egg to terrestrial young, or may even give birth to young.

Some of the amphibians that were collected and identified were *Polypedates leucomystax*, *Euphyctis cyanophlyctis*, *Polypedates maculates*, *Hyla annectens*, *Rana danielli*, *Limnonectes limnocharis*, *Bufo melanostictus*, *Hoplobatrachus tigerinus*, *Rhacophorus bipuntatus*, and *Amolops sp.*

2. Reptiles- The reptiles found in India include lizards, snakes turtles and crocodiles. However only snakes were collected from various regions of the state. Snakes are the most fascinating of all the reptiles and also one of the most diverse groups of animals in terms of shape, size, color and ways of life. Among 3150 species of snakes living on earth, 275 species are known from India. So far, 102 species of snakes are recorded from NE India.

Some of the snakes that were collected and identified were *Amphiema stolatum* (Striped Keelback), *Boiga cyanea* (Green Cat Snake) and *Rhabdophis himalayanus* (Himalayan Keelback).

PROPOSAL FOR STARTING A NEW PG DEPARTMENT

- Department of English

Having existed for the last five decades all the while rendering commendable service to the students of the state, reinventing itself at every turn, emerging with newer strengths with every new challenge set, the Department felt itself equal to the task of starting with a PG Department and sent in a proposal for affiliation to North Eastern Hill University on the 9th of August, 2015. The university was quick in its response and constituted a committee with Prof. MunMunMazumdar as the Chairperson and few other members. The committee sent in an Inspection Team on the 6th of April, 2016. The team met the members of the department and meticulously looked into feasibility criterion. The Department is awaiting a positive response from the university.

Stating the need for starting new PG Department

1. To bring the economically backward students to the Higher Education Sector. The college

has been catering to this section since its inception in the year 1956.

2. To ease the existing pressure on the university where number of seats are limited resulting in a yawning gap between demand and supply.
3. Qualified, experienced and competent teachers who can teach at the Post-Graduate level.
4. Existence and continuous build up of sound infrastructure like separate classrooms, staff rooms, ladies common room, language Laboratory and library facilities.
5. Bring research facilities to college.
6. Create better job opportunities for the students of the region.
7. Desire for up-gradation from UG to PG.

FUTURE PLAN

The teachers and students have undertaken minor projects till date, however, no major projects have been undertaken. The College plans to have a separate block in the college premises that will cater to the requirements of teachers taking up both major and minor research projects such as adequate rooms, laboratories, library, storage facilities in the near future so as to motivate teachers aspiring for research projects.

The annual interdisciplinary journal of Shillong College, which is an endeavour on the part of the college to start a positive trend in seeking, examining as well as deliberating on the seeds of knowledge, the first issue of this Inter-disciplinary *College Journal* entitled '*Echoes from the Hills*' will soon be formally released in 2016. In keeping with the interdisciplinary nature of the journal this present volume is highly eclectic in the sense that the papers included in it are from a variety of disciplines.

This volume's theme is entitled "**Society and Social Changes**" which is done on the basis of the encouraging responses we received from our contributors, who have in their papers discussed, examined and analysed issues and ideas pertaining to society and the social changes therein. The present issue has altogether six articles on various topics of different interesting crux's and purposes.

EDITORIAL BOARD HAS BEEN CONSTITUTED IN THE YEAR 2015

ADVISORY BOARD

Dr K D Ramsiej
*Principal,
Shillong College*

Prof B Myrboh
*Professor,
Department of Chemistry
North Eastern Hill University.*

Prof B Lyngdoh
*Assistant Professor,
Department of Tourism
North Eastern Hill University.*

Prof A K Nongkynrih
*Professor,
Department of Sociology
North Eastern Hill University.*

Prof K S Lyngdoh
*Former Pro Vice Chancellor
North Eastern Hill University.*

EDITORIAL BOARD

CHIEF EDITOR

Dr S. Khyriemujat,
*Assistant Professor,
Department of Sociology,
Shillong College*

JOINT EDITORS

Ms A B Basaiawmoit,
*Assistant Professor,
Department of English,
Shillong College*

Ms I S Warjri,
*Associate Professor,
Department of English,
Shillong College*

EDITORIAL ASSISTANTS

Dr D L Buam,
*Associate Professor,
Department of Chemistry,
Shillong College*

Dr E Kharkongor,
*Associate Professor,
Department of Economics,
Shillong College*

Ms P Khonglah ,
*Assistant Professor,
Department of Commerce,
Shillong College*

Mr T. Warjri,
*Assistant Professor,
Department of Computer Science,
Shillong College*

Dr E Pala, Assistant,
*Professor,
Department of Botany,
Shillong College*

Ms K Sohtun ,
*Assistant Professor,
Department of Sociology,
Shillong College.*



A scene at the interaction and discussion



Dr K.D.Ramsiej giving the welcome speech



Dr L.Cajee, delivers the talk on CBCS



Dr M.N.Bhattacharjee giving a short speech



Prof K.G.Bhattacharyya delivers the talk on CBCS



The resource persons relaxing before the start



A scene of audience on the opening of Study Center on ICS



VC, NEHU releasing the proceedings book of the International Seminar



VC, NEHU releasing the NSS Annual Magazine



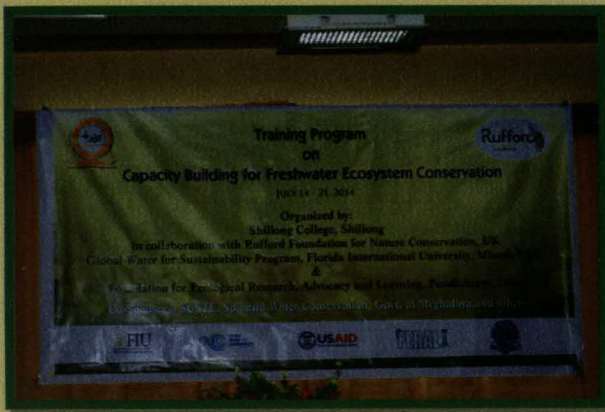
Launching of Study Center of Institute of Company Secretaries of India



Prof. B. Myrboh, Former Pro VC, NEHU delivers a talk on research activity



Prof. B. Myrboh, Former Pro VC, NEHU releasing the Research Cell volume



Training Programme on Capacity Building for Ecosystem Conservation



A group of participants of Ecosystem Conservation Training at the Grace City



Valedictory Session of the Training Programme



Dr R.S.Bhalla, GIS expert instructs participants at the GIS Training



Dr. Mukul Sangma Inaugurates the International Seminar on Attracting Best Talents in Basic Sciences



Inauguration of National Seminar on Mathematics- the need of the hour

Printed at Shandora press