

ELECTRONIC SCIENTISTS & ENGINEERS SOCIETY (ESES)



*Report and Activities of the Electronic Scientists and Engineers Society
(ESES) - 2019*

The yearly activities will be presented briefly touching the areas as defined in the background of the ESES, from the Research to Social work and Recreation programmes.

(A) Research :

1. Organization of Seminar

(a) National Seminar

(b) Special Lectures

2. Publication

3. Sponsored visits of college students to research centers/institutes

1. Organisation of Seminar

(a) National Seminar: NaSAEAST- 2019

The seminar on the National level was the Annual Convention of the ESES arranged from October 25 to 26, 2019 with a pre-seminar workshop on October 24.

More than 100 participants took part in the programme. An Exhibition was also arranged to encourage the young participants in the respective themes defined by the NaSAEAST coordinator.

Inception & formation:

A National Seminar on Electronics & Allied Science and Technology (NaSAEAST-2019) organized by the Electronic Scientists and Engineers Society (ESES), Computer Science Department, and ST Radar Centre Gauhati University during October 25-26, 2019 under the Chief patronization of Dr. Pratap Handique, Vice Chancellor of Gauhati university, came to a successful conclusion. The seminar enjoyed an overwhelming response from scientists from India and abroad.

Pre-seminar Workshop:

The pre-seminar workshop on October 24th had been arranged with basic aims such as how to build up interest & introspective minds of young talents to research areas blended by fundamental and Application potentialities. A few topics selected as the target problems are (i) the Maxwell equation and its hidden application (*Prof. A. K. Barbara, President ESES*) (ii) Lower-Upper atmospheric Coupling dynamics in earthquake precursor studies in quiet and geomagnetic disturbed ambiances role of inter atmospheric coupling factors in modifying upper atmospheric features during seismic and geomagnetic storm events (*A. Depueva, M Devi, V. Depuev, K-I Oyama, Prof. A.K.Barbara and Ya Yu Ruzhin*, from Russia, Gauhati University and Kyushu University Japan) (iii) On Electromagnetic precursors to the Hokkaido earthquake in September 2018 and consideration of Lithosphere-Atmosphere-Ionosphere Coupling (*M. Hayakawa, Alexander Razhnot, Maria Solovieva and Shih-San yang* from Japan and Russia) and (iv) Thunderstorm precipitation and predictability: Role of ST Radar of GU (*Prof M. Devi, ST Radar Centre/Dept. of Physics and Secretary ESES*).

The deliberation of these four papers contributed by scientists from Russia, Japan, and Gauhati University was followed by active discussions through a good interactive platform on the role of Maxwell's equation in the design of electronic modules and on the successful applications of Electro-magnetic methods in identifying earthquake/Hazard percussive features.

Formal opening of NaSAEAST-2019:

Formally opening the NaSAEAST-2019 on October 25th at Gauhati University, the honorable vice chancellor focused on the application potentialities of Electronics and spoke about the scenario as how this branch of technology has now become an indispensable part of all the spheres of our life. He has expressed his compliments on the receipt of the ST Radar system of Gauhati University through the dedication of the electronics group of the GU. He has put emphasis on the development of research in Bioelectronics at Gauhati University.

Prof. A.K. Barbara, President ESES, has emphasized the prime role taken by the Society in the development of a strong pool of human resources at all the stages from research scientists to uneducated youth for self-employment, in the field of electronics. Dr. D. Chakrabarty of

Handique Girls' College, Guwahati has offered a brief but well-descriptive view of the activities of ESES since its inception in 1984 and its proliferation in different dimensions during the span of thirty-four years. Dr. A. J. D. Sarma, Convener of NaSAEAST-2019 welcomed the dignitaries and participants and Dr. A. Medhi of ST Radar Centre offered a vote of thanks.

There were 100 participants presenting 40 research/technical papers from national and international institutes of subjects with the theme of **Hazard monitoring, prediction, and prevention**. Dr. S Shaw of RMC Guwahati provided a very elaborate description of the need of measurement of cloud height base by systems like Laser Ceilometer in providing reliable information to Civil aviation for the safety of aircraft landing/taking off. Prof. P V Koperkar of NEHU spoke on the need of monitoring atmospheric electricity in hazard-related applications. Prof. A K Mahanta and Dr A Sarma, of Gauhati University addressed aspects of manmade hazards in the cyber field and the mode of monitoring and prevention. A few special items on computer software were presented by Prof. B R Barua of IIT Guwahati and Prof. A GohainBarua, GU had spoken on the fundamental research outputs related to the optical properties of fireflies. Dr. D Chkrabarty of Handique Girls' College, Guwahati presented statistical methodology in research applications. The first result of ST Radar of GU on prediction features of thunderstorms was presented with Radar wind profiling data by Prof M Devi. Prof. P H Talukdar, Vice Chancellor of CMJ University, Meghalaya, has highlighted the transition of the industrial revolution and its future projection.

Besides the invited and review presentations, there were young participants from different Universities and distinguished colleges and institutes of the NE region covering wide topics from (a) State of the art electronic system design, (b) Remote sensing techniques in exploration of causes of current atmospheric changes including natural hazards, (c) New approaches in the design of need-based electronic systems and devices, (d) Signal processing and Data Mining, (e) Computational methods in applied science and technology, (f) Nanotechnology and (g) Bioscience & technology and topics like intellectual property rights.

Inaugural Session :



Viewgraph :1Inaugural session of NaSAEAST-2019 at Gauhati University: In the extreme left top panel: from left DDGM, RMC, Vice Chancellor GU, president ESES: Young members of Gauhati University participated by presenting University Invocation song; Formal opening of NaSAEAST-19 by VC, GU and his inaugural speech (Right panels of top and bottom). Opening of NaSAEAST-19 Abstract and commemoration volume (Bottom left panel).



Viewgraph 2: Invitees (Top three panel) and young participants (bottom panel) during deliberations at different Sessions

Programme for Collegestudents:

Display of Models, Posters & Skilled Products:

The involvement of young students from colleges and Universities displaying their innovative scientific ideas and thoughts through posters and working models is a good sign that the ESES could make an impact on young minds in building up interest in Sciences/Technology. A view

of Hand on Tools exercises on electronics Systems & Devices was also arranged at the ST Radar site for the benefit of students with Coordinator: Mr. P CKalita, Department of Physics, Gauhati University.



Viewgraph 3 : Poster competition for college students

(b) Lecturers presented by eminent scientists:

(i) Distinguished scientists visiting the Society

Prof . Prof. R. P. Singh, President, AGU Natural Hazards Group and Professor, of Earth System Science and Remote Sensing School of Life & Environmental Sciences, Chapman University California, USA, delivered a talk on the topic: “Ground and Space Observations to study Land-Ocean-Atmosphere coupling Associated with Natural Hazards” on 24th June 2019 and had interactive session with the members of the ESES (View graphs 4).



(a)



(b)

Viewgraph 4 : (a)Prof. R.P..Singh during deliberation of his lecture and (b) with the group of ESES members

(ii) **Prof A.K.Barbara** , President of ESES and Ex-Head Department of Physics, Gauhati University delivered the following topics :

- (1) ABC of Electronics for school students
- (2) The science of introducing imaginary Impedances in electrical and electronic circuits

2. Publications

a) Books :

The Society periodically publishes books relevant to the aims and objectives covering research areas to popular science topics.

This year's publication is "Today's Technology & Forerunning Research". (ISBN 978-81-92955-77-3), an Edited book covering research topics, providing opportunities for young scientists for publishing their research materials.

A brief outline is presented :



Today's Technology & Forerunning research

A collection of articles edited by Prof. A.K. Barbara and Prof. M. Devi and published by Purbayon Publication, Panbazar, Guwahati-1

First Edition – Aug, 2019 Rs. 300/-

ISBN : 978-81-92955-77-3

First Edition:

Aug, 2019

© Writer

Price : 300/-

Cover : Sanjib Bora

Published by:

Purbayon Publication

Jaswanta Road

Near Panbazar Aadarsha Prahtamik Vidyalaya

Panbazar, Guwahati- 1, Assam, India

Email-purbayonindia21@gmail.com

website: purbayonpublication.com

Contact No. +91- 9864422157, 0361-2700969

Editorial Board

1. Prof. Yu. Ya. Ruzhin

IZMIRAN, Moscow, Russia

2. Prof. Masashi Hayakawa

Advanced Wireless communication research Centre The

University of Electro-Communications, Japan

3. Prof. K. I. Oyama

*International Center for Space Weather Study and
Education, Kyushu University, Fukuoka, Japan*

4. Professor Ramesh P. Singh

*School of Earth and Environmental Sciences, Schmid College
of Science and Technology Chapman University, USA*

5. Dr. Anna Depueva

IZMIRAN, Moscow, Russia

6. Dr. Victor Depuev

*Senior Scientist Pushkov Institute of Terrestrial Magnetism,
Ionosphere and Radio Wave Propagation. Moscow, 108840,
Russia*

7. Dr. Nofel C Larrosas

Ateneo De Manila University, Philippines

8. Dr. K. P. Ray

SAMEER, Mumbai, India

9. Prof. S.K. Sarkar

EX Head RSP Division , NPL New Delhi, India

From Editorial Desk...

The book is a collection of scientific papers related to two basic themes

- (i) Remote Sensing & Hazard monitoring and
- (ii) New approaches in applied research.

Words of Selection:

For contributed articles, even short in length, if contains originality of the author is considered. On review articles on the concerned subjects, the Editorial Board of the International Journal of Electronics & Applied Research (IJEAR), a journal of the Electronic Scientists & Engineers Society (ESES) selects one of the best papers of the journal to publish in a book as paper No 01, in this current issue.

The principal discipline of this issue of the book is “Hazard” which covers earthquakes, cyclones, thunder, and all forms of worst weather situations. It is true that considerable difficulties and problems are involved in the prediction of such hazards especially for earthquakes and thunder because of complex physical and dynamical processes, the identification of short-term precursive features for such situations will be a giant step in future prediction modeling this edition is framed with one of this objectives.

The “new approaches in applied research” covers a vast area. A few selected ones are accepted in this issue.

The book contains a review article by DrYa Yu Ruzhin of IZMIRAN Russia and contributions from young scientists of the NE region.

Minakshi Devi
Chief Editor

b). Journals

The Society is regularly publishing its biannual journal “The International Journal of Electronics and Applied Research (IJESR) since 2014. This year too, the following two volumes were launched :

- (1) International Journal of Electronics and Applied Research Vol 6 , issue 1
- (2) International Journal of Electronics and Applied Research Vol 6, issue 2

3. Organisation of Visits of College Students and Young Scientists to Research Facilities :

The ESES organized excursion trips where young scientists and College students were taken to the site of the Stratospheric Tropospheric (ST) Radar of GU, a unique facility being created at this university for researchers not only from India but for scientists all over the globe. Prof. M Devi, Project Investigator of ST Radar, GU, presented an overview of the facility which could be utilized by scientists and engineers of many disciplines of Science and Technology as the ST Radar has now come into the operational stage. She also welcomed young participants for submission of relevant projects for making the best utilization of this system.

(B) Training Programmes for College Students Research

The following are the Two Training Programmes conducted during 2019 for College students:

1)A 3-day Workshop on Skill development in “***Electronic Experiments: Level I***”

Organized by

Electronic Scientists and Engineers Society (ESES)in collaboration with Gauhati University

July 4-6, 2019

Venue: ST Radar Centre, Gauhati University

2)A 3-day Workshop on Skill development in “***Electronic Experiments: Level II***”

Organized by

Electronic Scientists and Engineers Society (ESES)in collaboration with Gauhati University

July 8-10, 2019

Venue: ST Radar Centre, Gauhati University

(A copy of the call letter is attached)

Convener of the Programme :

Mr.P.C.Kalita ,

Department of Physics, Gauhati University



A 3-day Workshop on Skill development in "Electronic Experiments: level II"



Organized by
Electronic Scientists and Engineers Society (ESES)
in collaboration with Gauhati University

July 8-10, 2019

Venue: ST Radar Centre, Gauhati University

President:

Prof. A K Barbara
Prof. Emeritus, GU

Secretary:

Prof. M Devi
ST Radar Centre, GU

Jt-Secretary:

Dr. K Prakash
Executive Member, ESES

Adviser:

Dr. D Chakrabarty
Handique Girls' College, Guwahati

Convener

Mr. P C Kalita
Department of Physics, GU

Jt-Convener:

Dr. A Medhi
ST Radar Centre, GU

Members:

Dr. M Saikia
ST Radar Centre, GU
Dr. S Das
ST Radar Centre, GU
Mr S Patgiri
ST Radar Centre, GU
Miss K Pathak
Department of Physics, GU

Supporting Staff:

Ms. Hiramani Kalita,
Department of Physics, GU
Mr. Debashis Halder, GU
Mr. Abhay Mali, GU
Mr. Rakesh Ali, GU

The ESES, as in other years, is organizing a three day workshop cum training programme to develop skill in the field of Electronics. The demands of such persons are very high, especially in design and maintenance of electronic and associated systems in industries and laboratories. Growth of such quality thus requires acquiring skills at a young age mainly in hand on tool practices. The workshop is framed under this background.

Therefore, starting with hands on lab tools and basic electronics circuits, the training will cover design and working of electronic gadgets finally to provide how methodological approaches could make a system reliable. Similar teaching modes will be adopted in the design of logic based systems from universal gate like a NAND, to adder, counter and relevant digital circuits. The practical training will gradually move from passive and discrete active components to IC devices suitable to the undergraduate students.

The course is framed to help students and learners to face the electronic laboratory with confidence.

Interested participants may submit the filled in registration form (via email: eses.assam@gmail.com), to reach the office of the ESES by June 25th, 2019.

P.C. Kalita
14/06/2019
Convener

More than 50 students took part in the program. The hand on tool experiments offered to them with the design and fabrication of simple electronic devices like power supplies, amplifier units, AD converters, and the gadgets of day-to-day use are found to be very effective and useful to the participants as the training course covers a part of College curriculum.

(C) Recreation Programmes

(i) Our Pranam to Goddess of Learning & Wisdom

It is the tradition of the ESES to offer prayer to Devi Saraswati the Goddess of learning, wisdom, and knowledge. This year too, the ESES members celebrated the occasion during BasantPansami (view graph 5), by blending the ritual and heritage of the region. The members sought blessings from the Goddess for enriching their minds with knowledge, intelligence, and wisdom.

The event came to a close after the deliberation of a learned talk on “ Mind, wisdom and Science”, by Prof A.K. Barbara , the president of ESES.



View graph 5 : Puja celebration and seeking blessings from Devi Saraswati

(ii) One-day excursion to UMIUM

The ESES has organized a trip to a heritage site beautifully blended between the Valley of Assam and the Hilly terrain of Tura, the Meghalaya. The harmony of Nature with spring and hills is synchronized with the harmony of people of all backgrounds, religions, casts, and languages! The beautiful stones of all shapes scattered around the location (viewgraphs 6,7,8) with extremely smooth surfaces have kept hidden history, perhaps their origin under the arm of the sea. The historical and geological facts reveal how this region even the Himalayan ranges were under the Sea and imagine the power of Nature in shaping, drilling, and smoothening a hard rock how more challenging than that of the state-of-the-art technology of today. We know a pebble is a source to unveil history if we can learn.

The wonderfully retained natural beauty of the village Umiang is only 60 km from Guwahati, the main techno hub of the NE region of India. The rope bridge and the fast communication links between the valley& hill are the creation of the Natural minds too.

We the group (viewgraph 9) enjoyed talking with the village women who were extremely active, dynamic, and happy. But we felt a pain that for the survival of their existence the touch of modern communication is a must . We do not know how far we can fill the gap.

We bade farewell to the women who offered us beetle nuts as a token of love and respect.



View graph 6



View graph 7



View graph 8



View graph 9

A few photographs display the serene beauty of Nature. Can we uphold it?

4. Obituary : *A message of Condolence*

The members of the Electronic Scientists & Engineers Society (ESES), assembled at the ST Radar Centre, GU to offer their deepest condolence to the bereaved family of Dr. Bhumidhar Choudhury (Ex- Head & Professor, Department of Physics, GU) who breathed his last on 26th August 2019.

Prof. A K Barbara, president of the ESES briefed the congregation on the support and encouragement received by the Department of Physics during his service period at GU.

Members of the Society have also recalled his valuable academic contributions and the guidance that has paved the way to today's progress of the University.

The Congregation observed one-minute silence with a prayer for the eternal peace of the departed Soul.

Prof A. K. Barbara
(Ex-Head, Department of Physics, GU)
President, ESES

Date: 27/08/2019