A Brief Report On

DST Funded 7-Day Training Program on "EMERGING TECHNOLOGIES IN MECHANICAL, ELETRICAL AND ELECTRONICS ENGINEERING"-JANUARY 2023

Date: 27th January 2023 – 2nd February 2023

Venue: Vignan's Institute of Engineering and Technology, Duvvada, Visakhapatnam.

The inauguration of DST Funded 7-Day Training Program on "EMERGING TECHNOLOGIES IN MECHANICAL, ELECTRICAL AND ELECTRONICS ENGINEERING"-JANUARY 2023, organized at Vignan Institute of Engineering and Technology, Duvvada, Visakhapatnam, Andhra Pradesh- 530045, under STUTI Program-2021 (DST/RND/STUTI/2021/18) took place on 27th January.

INAUGURATION

The Inaugural function of the programme took place in Vikram Sarabhai Seminar Hall on 27.01.2023. The programme was initiated with the lighting of the lamp followed by prayer. Dr V. Srinivas, Professor and Head of Mechanical Engineering, GITAM Deemed to be University, Visakhapatnam, attended as a Chief Guest and delivered a keynote. The Rector of VIIT, Duvvada, Dr.V.Madhusudhan Rao addressed the gathering and gave importance of Research oriented things; Principal of the Institute Dr. B. Arundhathi explained all three crores worth DST funded Projects in the Core Department like EEE, Mech & ECE branches. Vice Principal Dr.K. Madhusudhana Rao, other Deans and HODs participated in the Event. The programme is coordinated by Dr. B. Sateesh and STUTI investigator Dr. B. Srinivasa Prasad, GITAM Deemed to be University, Visakhapatnam. Faculty from other colleges and Vignan participated in the training Program.

Figure 1: Inaugural of the DST Funded 7-Day Training Program on "Emerging Technologies in Mechanical, Electrical And Electronics Engineering" on 27th January 2023.

SCHEDULE

Schedule for 7 Days Training Program On "EMERGING TECHNOLOGIES IN MECHANICAL, ELETRICAL AND ELECTRONICS ENGINEERING" (27JAN-2 FEB 2023)

DAY	MORNING SESSION (10.00AM – 12.00 PM)		AFTERNOON SESSION (1.30 PM - 4.00 PM)
Day 1 (27.01.2023)	Resource Person: Dr. V. Srinivas Topic: Nanomaterials for Automotive Engineering Applications	Lunch Break (12.00 pm – 1.30 pm)	Resource Person: Dr. V V Venugopal Rao Hands on experience on equipment used for measurement of vibro-acoustics (ECR/2016/000380)
Day 2 (28.01.2023)	Resource Person: Dr. V Madhusudhana Rao Topic: Applications and necessity of reverberation.		Resource Person: Dr. V V Venugopal Rao Hands on experience for measuring SAC, STC using reverberation chamber (ECR/2016/000380)
Day 3 (29.01.2023)	Resource Person: Dr. S. RAMBABU Topic: Study on formability, micro structure and mechanical behaviours of Ti alloy sheets using single point incremental		Resource Person: Dr. G. Yoganjaneyulu Hands on experience on micro-CNC milling machine (SRG/2020/000988)
Day 4 (30.01.2023)	Resource Person: Dr. B. Arundhati Topic: State of health of electric vehicle energy storage – battery management system		Resource Person: Dr. B. Arundhati Hands on experience electric vehicle battery management system using electrochemical analyser (ECR/2017/001127ES)
Day 5 (31.01.2023)	Resource Person: Dr. Pudi Sekhar Topic: Drop Control of microgrids		Resource Person: Dr. Pudi Sekhar Hands on experience on Drop control of inverters using PSCAD (ECR/2016/001413)
Day 6 (01.02.2023)	Resource Person: Dr. Kethavathu Srinivasa Naik Topic: Design Optimization and Performance Improvement of Large Antenna Arrays		Resource Person: Dr. Kethavathu Srinivasa Naik Hands on training on Design, Fabrication and Testing of Antennas (EEQ/2016/000391)
Day 7 (02.02.2023)	Resource Person: Dr. Aggala NagaJyothi Topic: RADAR System Design		Resource Person: Dr. Aggala NagaJyothi Hands on experience on Generation of Radar waveforms and usage in system components (DST-SERB-ECR-2017/-256)

Training Program Coordinator: Dr. B. Sateesh **Project Investigator, STUTI: Prof. Balla Srinivasa Prasad**

ORGANISED AT VIGNAN'S INSTITUE OF INFORMATION TECHNOLOGY VISAKHAPATNAM 530049

UNDER GOVT.OF INDIA'S STUTI PROGRAM-2021 (DST/RND/STUTI/2021/18)

DAY-1, 27th JANUARY 2023

TECHNICAL SESSION:

The first-day session focused on ***"Nanomaterials for Automotive Engine Applications"*** was taken by **Dr. V Srinivas, Professor, Mechanical Engineering, GITAM, Vishakhapatnam**. He lectured on state-of-the-art of nanotechnology and how this technology can be applied to improving the comfort, safety, and speed of transportation vehicles.

Figure 3: Session by **Dr. V Srinivas, Professor, Mechanical Engineering, GITAM, Vishakhapatnam,** on Nanomaterials

HANDS-ON SESSION:

Later in the afternoon, the hands-on session was carried out by **Dr. B. Sateesh, Professor, Dept. of Mechanical, VIIT, DUVVADA**, on the equipment used for the measurement of vibro-acoustics (ECR/2016/000380). The session taught the participants how to regulate the system voltage by adjusting the transformer's turn ratio.

Figure 4: Training session on measurement of vibro-acoustics

DAY-2, 28th JANUARY 2023:

TECHNICAL SESSION:

On day 2, the session started with ***"Applications and necessity of reverberation"*** by **Dr. V Madhusudhana Rao, Rector, VIIT, DUVVADA**, focused on lecturing that reverberation is frequency dependent on reverberation time and is much applicable in the architectural design of spaces.

Figure 5: Session by Dr. V Madhusudhana Rao, Rector, VIIT, Duvvada

HANDS-ON SESSION:

In the afternoon session after lunch, **Dr. V V Venugopal Rao, Associate Professor, Dept. of Mech, VIIT, DUVVADA**, conducted hands-on experience for measuring SAC, and STC using a reverberation chamber (ECR/2016/000380).

Figure 6: Training session on reverberation chamber

DAY-3, 29th JANUARY 2023:

TECHNICAL SESSION:

On day three, **Dr. S. Rambabu**, Assistant Professor, Dept of Mechanical, VIIT, DUVVADA, delivered a session on ***"Study on formability, microstructure and mechanical behaviours of Ti alloy sheets using single point incremental".*** He discussed that strain hardening work would increase the microstructural evolution, and the domination of such evolution is a critical factor to study to control or optimise the process quality.

Figure 7: Session delivered by Dr. S. RAMBABU, VIIT, DUVVADA, Vishakhapatnam

HANDS-ON SESSION:

Later in the afternoon session, the practical hands-on sessions on a micro-CNC milling machine (SRG/2020/000988) Dr. G. Yoganjaneyulu, Assistant Professor, VIIT, DUVVADA, Visakhapatnam.

Figure 8: Practical session on micro-CNC milling machine.

DAY-4, 30th JANUARY 2023:

TECHNICAL SESSION:

On day four, **Dr. B. Arundhati, Principal, VIIT, Duvvada,** gave a presentation on **"State of health of electric vehicle energy storage – battery management system"**. She explained the development trends of battery chemistry technologies, technologies regarding batteries, and technologies replacing batteries.

Figure 9: Session delivered by **Dr. B. Arundhati**, Principal, VIIT, DUVVADA

HANDS-ON SESSION:

In the afternoon session, **Dr. B. Arundhati,** Principal, VIIT, Duvvada focused on training participants in Hands on experience with electric vehicle battery management system using an electrochemical analyzer (ECR/2017/001127ES)

Figure 10: Practical Session on Battery Management systems.

DAY-5, 31st JANUARY 2023:

TECHNICAL SESSION:

On the fourth day of class, the session was delivered by a resource person **Dr. Pudi Sekhar**, Assistant Professor, Dept. of EEE, VIIT, Duvvada, on the topic **"Drop Control of microgrids."** He stated that DC microgrid is becoming popular because of their high efficiency, high reliability, and connection of distributed generation with energy storage devices and dc loads.

Figure 11. Session delivered by Dr. Pudi Sekhar, VIIT, DUVVADA

HANDS-ON SESSION:

Later in the afternoon, **Dr. Pudi Sekhar,** Assistant Professor, Dept. of EEE, VIIT, Duvvada conducted on hands-on experience on Drop control of inverters using PSCAD (ECR/2016/001413)

Figure 12: Practical session on Drop control of inverters

DAY-6, 1st FEBRUARY 2023:

TECHNICAL SESSION:

On day 6, **Dr. Kethavathu Srinivasa Naik,** Associate Professor, Dept. of ECE, VIIT, DUVVADA, delivered a lecture on ***"Design Optimization and Performance Improvement of Large Antenna Arrays"***. He explained that the signals from each antenna element are combined and processed simultaneously, providing high sensitivity with multiple beams providing a wide field of view.

Figure 13: Session by **Dr. Kethavathu Srinivasa Naik,** Associate Professor, Dept. of ECE, VIIT, Duvvada

HANDS-ON SESSION:

Later in the afternoon, **Dr. Kethavathu Srinivasa Naik,** Associate Professor, Dept. of ECE, VIIT, DUVVADA, DUVVADAdemonstrated Hands-on training on Design, Fabrication and Testing of Antennas (EEQ/2016/000391).

Figure 14: Hands-on practical session on testing Antennas

DAY-7, 2nd FEBRUARY 2023:

TECHNICAL SESSION:

On day 7, **Dr. Aggala NagaJyothi,** Associate Professor, Dept. of ECE, VIIT, DUVVADA, delivered a "RADAR System Design" presentation. She explained the radar system design, a complex process that relies on simulation and analysis over a design space spanning the digital, analogue, RF, and data processing domains.

Figure 15: Session delivered by Dr. Aggala Naga Jyothi, Associate Professor, Dept. of ECE, VIIT, Duvvada.

HANDS-ON SESSION:

In the afternoon, **Dr. Aggala NagaJyothi**, Associate Professor, Dept. of ECE, VIIT, Duvvada, gave hands-on experience on the Generation of Radar waveforms and usage in system components (DST-SERB-ECR-2017/-256). The participants were able to understand the concept of Radar Waveforms.

Figure 16: Hands-on live demonstration of Radar Waveforms

Distribution of Certificates:

Figure 17: Distribution of certificates to the Participants at VIIT, Duvvada, Visakhapatnam

STUTI program coordinator Dr. Balla Srinivasa Prasad congratulated all the participants on the successful completion of the seven-day training. The training coordinator Dr. B. Sateesh of Vignan's Institute of Engineering and Technology, Duvvada, Vishakhapatnam, thanked each other for completing the training program successfully. Coordinators distributed certificates to participants and collected feedback forms from the participants.

VOTE OF THANKS

At the end of day seven, the STUTI program coordinator Dr. Balla Srinivasa Prasad, thanked the training coordinator of VIIT, Duvvada, Dr. B. Sateesh, and also the program panel members of VIIT, DUVVADA college thanked the delegates and resource persons on successful completion of the 7-day program by sharing their knowledge and experiences to all participants. The program concluded with the National Anthem.

Figure 18: Group photo with the participants who attended the 7-day workshop from 27th JANUARY– 2nd FEBRUARY 2023 VIIT, Duvvada, Visakhapatnam, Andhra Pradesh.