



AICTE IDEA Lab Annual Activity Report (2025–2026)

1. Activity Summary

The AICTE IDEA Lab at Girijananda Chowdhury University continued to function as a multidisciplinary innovation and prototyping facility during the academic year 2025–2026. The laboratory promoted experiential learning through hands-on training, prototype development, faculty development programmes, student projects, industry interaction, and outreach activities. It provided students and faculty members with access to advanced digital fabrication technologies, including 3D printing, PCB design and fabrication, CO₂ laser cutting, and engineering design tools, enabling them to transform innovative ideas into functional prototypes.

2. Student Activities and Prototype Development

The AICTE IDEA Lab actively supported curriculum-based and interdisciplinary student projects by providing access to advanced fabrication facilities and technical mentoring.

Department of Electronics & Communication Engineering (ECE)

- Three **Major Project Groups (8th Semester)** carried out their project work using the IDEA Lab facilities under the supervision of:
 - **Dr. Basab Das, Assistant Professor, Dept. of ECE:** Remote Controlled Pick and Place Robotic Arm
 - **Dr. Basab Das, Assistant Professor, Dept. of ECE:** Development of an Intelligent Surveillance System using IOT/AI (Published in GCON Conference, 2026, IIT Ghys)
 - **Mr. Abhinandan Kalita, Assistant Professor, Dept. of ECE:** Realtime EEG based brain IOT interface using multichannel motor cortex analysis and ensemble SVM classification. (Published in GCON Conference, 2026, IIT Ghys)
- One **Mini Project Groups (6th Semester)** completed prototype development and testing using the laboratory infrastructure.
 - **Mr. Abhinandan Kalita, Assistant Professor, Dept. of ECE:** Design and Development of a Low-Cost Automated Toll Gate System using Arduino Uno and ultrasonic sensor. (Published in International Conference on Innovative research in science, engineering and social sciences, 2026 in Assam Kajiranga University)
- 8 **Micro Project Groups (4th Semester)** utilized the IDEA Lab facilities for design, and fabrication.

Department of Computer Applications (CA)

- Subject based project groups under the supervision of **Mr. Arindom Ain, Assistant Professor, Dept. of CA**, utilizing the IDEA Lab facilities for prototype development.
- **Project: Vehicle Tracking and Anti-Theft System,**
- **Project: Smart Helmet Safety System**



Department of Computer Science & Engineering (CSE)

- One student mini-project group completed its project under the supervision of **Dr. Th. Shanta Kumar, Associate Professor, Dept. of CSE** with technical support from the IDEA Lab.
- **Project: Sensor based pressure and action reactivate smart hand.**

Department of Civil Engineering (CE)

- One student has developed a product as part of an assignment for the subject Design Thinking and IDEA Lab with potential design registry (IPR) under the supervision of **Dr. Dheeman Bhuyan, Assistant Professor, Dept. of ME**
- **Product: Guitar Pick Holder.**

Department of Mechanical Engineering (ME)

- One student group completed its project under the supervision of **Dr. Dheeman Bhuyan, Assistant Professor, Dept. of ME**
- **Project: Method and Apparatus for benchtop testing of ballistic protection material**

Department of Electrical Engineering (EE)

- Two student groups completed their project under the supervision of **Dr. Sandeep Bordoloi, Associate Professor, Dept. of EE**
- **Project: Development of an instrumentation system for the analysis of different types of soils and plants under excess urea condition.**
- **Project: Design of a smart transformer oil adulteration system using optical sensors.**

Technical Skills Acquired

Students gained practical exposure in:

- 3D Printing and Additive Manufacturing
- PCB Design and Fabrication
- Arduino-based Embedded Systems
- CO₂ Laser Cutting and Engraving
- Engineering Model Development
- Product Prototyping and Testing

The AICTE IDEA Lab played a significant role in strengthening experiential learning by enabling students to transform theoretical concepts into functional engineering prototypes.

3. Workshops and Hands-on Training

3.1 Green School International Visit

Date: 04 December 2025



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Participants: 84 Students

Students visited the AICTE IDEA Lab and received demonstrations on 3D printing, PCB fabrication, laser cutting, rapid prototyping, and engineering model development.

3.2 Summer Internship Programme in collaboration with ME Department

Duration: 30 June 2026 – 18 July 2026

Participants: 22 Students

Participating Institutions

- Jorhat Institute of Science & Technology (JIST)
- Girijananda Chowdhury University
- Baksa Polytechnic
- Pandu College
- B. Borooah College

Training Modules

- 3D Printing and Product Design
- CO₂ Laser Cutting
- Acrylic Design and Fabrication

The internship emphasized practical learning through prototype development and digital manufacturing technologies.

3.2 Summer Internship Programme in collaboration with ECE Department

Duration: 30 June 2026 – 18 July 2026

Participants: 14 Students

Participating Institutions

- Jorhat Institute of Science & Technology (JIST)
- Barak Valley Engineering College
- Tezpur University
- D.K. College, Mirza

Training Modules

- PCB Designing and Fabrication



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The internship emphasized practical learning through prototype development and digital manufacturing technologies.

3.3 Faculty Development Programme

Duration: 06–10 January 2026

Participants: 19 Faculty Members

A five-day Faculty Development Programme on **Applications of CAD in 3D Printing and 3D Scanning** was organized to enhance faculty expertise in product design, digital manufacturing, and rapid prototyping.

3.4 Skilling Programme on PCB Designing and Fabrication

Date: 08 May 2026

Institution: Pandu College

Participants: 11 Students

The programme introduced students to PCB circuit design, PCB fabrication techniques, and practical hardware development. The academic interaction and demonstrations delivered by the resource person had a positive impact on the participants, leading one student to opt for admission to the Department of Electronics and Communication Engineering after being inspired by the session.

3.5 Familiarization Programme

Date: 22 November 2025

Institution: Kendriya Vidyalaya, Maligaon

Participants: 30 Students

Students received hands-on exposure to:

- Arduino-based PCB Designing
- PCB Fabrication
- 3D Printing
- 3D Scanning
- Engineering Model Development

4. Faculty Activities

Faculty members extensively utilized the AICTE IDEA Lab for academic mentoring, project supervision, research support, and prototype development. The laboratory facilitated interdisciplinary collaboration and provided technical support for curriculum-based projects,



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engineering design, and digital fabrication. Faculty members also enhanced their expertise through specialized training programmes conducted during the academic year.

During the academic year 2025–2026, the following prototype development activities were undertaken:

Pocket Microtome: A prototype was jointly developed by **Dr. Dheeman Bhuyan, Assistant Professor, Dept. of ME** and **Prof. Damiki Laloo, Dean, School of Pharmaceutical Sciences** using the facilities of the AICTE IDEA Lab. The prototype is currently in the validation phase.

PLA Waste Remediation: As part of a Seed Fund Project, **Dr. Nirmala Devi, Associate Professor, Dept. of Chemistry** and **Dr. Dheeman Bhuyan, Assistant Professor, Dept. of ME** initiated the development of a sustainable solution to remediate and utilize PLA waste generated by the AICTE IDEA Lab's 3D printing activities. The project focuses on value-added applications of waste PLA.

5. Industry Collaboration and MSME Support

The AICTE IDEA Lab strengthened academia-industry interaction by initiating collaborative activities with industries and MSMEs.

Expressions of Interest (EOIs)

- XOPuntech Software Company
- Siddhi Vinayaka MSME
- Lakshmi Enterprise & Solution (MSME)

These collaborations focus on:

- Product Development
- Technical Consultancy
- Prototype Development
- Technology Transfer
- Engineering Design Support

The laboratory also extended technical support to MSMEs through engineering consultation and innovation-driven product development initiatives.

6. Entrepreneurship and Innovation

The AICTE IDEA Lab actively promoted innovation and entrepreneurship by encouraging students and faculty members to develop practical engineering solutions for addressing real-world societal challenges through interdisciplinary collaboration and prototype development.

Innovation Project

Project Title: Sapal Guard – Smart Footwear Attachment for Snake Intrusion Mitigation



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To facilitate the development and implementation of this innovative project, a Memorandum of Understanding (MoU) was initiated by the **Hon'ble Vice-Chancellor, Girijananda Chowdhury University**, in collaboration with **PM Shri Bokial High School** and the **Incubation Cell**, Girijananda Chowdhury University, Assam. The collaboration aims to develop an affordable and innovative engineering solution for mitigating snake intrusion hazards, while fostering innovation, product development, and entrepreneurship among students and researchers.

7. Research and Proposal Development

The laboratory actively supported research activities by providing infrastructure for prototype development, engineering experimentation, and product design.

Major Achievement

- Submission of **ANRF-ATRI Research Proposal** on **13 March 2026**.

The laboratory also prepared Expressions of Interest (EOIs) for collaborative product development with industrial partners and MSMEs.

8. Outreach Activities

The AICTE IDEA Lab organized outreach programmes to promote innovation, engineering education, and digital manufacturing technologies among school and college students.

Major Outreach Activities

Programme	Participants
Green School International	84
Kendriya Vidyalaya, Maligaon	30
Pandu College	11

These outreach activities familiarized participants with modern manufacturing technologies and inspired them towards innovation and engineering.

9. Institutional Product Development

The AICTE IDEA Lab also contributed to institutional infrastructure through the development of customized products.

Major works completed:

- Fabrication of **two illuminated glow-letter signboards** for Girijananda Chowdhury University.
- Design and fabrication of **engraved nameplates** for the Hon'ble President, SSA, and Hon'ble Chancellor of the University.



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These activities demonstrated the effective utilization of the laboratory's laser cutting, engraving, and fabrication facilities.

10. Success Stories

Major achievements during the academic year include:

- Successful organization of a multi-institutional Summer Internship Programme.
- Conduct of a five-day Faculty Development Programme involving 19 faculty members.
- Support for undergraduate major and mini projects across ECE, CA, ME, EE, and CSE departments.
- Development of institutional products including glow-letter signboards and engraved nameplates.
- Submission of an ANRF-ATRI research proposal.
- Establishment of collaborative initiatives with industries and MSMEs through EOIs.
- MOU with **PM Shri Bokial High School** for the product development of **Sapal Guard** innovation project addressing a real-world societal challenge.

11. Financial Utilization Summary

The available AICTE IDEA Lab resources were effectively utilized for:

- 3D printing materials and accessories
- PCB fabrication consumables
- Acrylic sheets and laser cutting materials
- Electronic components for student projects
- Workshop and internship activities
- Prototype development
- Institutional fabrication works

The available resources were efficiently utilized to support academic, research, innovation, and outreach activities throughout the reporting period.

12. Future Action Plan (2026–2027)

The AICTE IDEA Lab plans to:

- Expand interdisciplinary student innovation projects.
- Strengthen collaboration with industries and MSMEs.
- Organize additional Faculty Development Programmes and student skilling initiatives.
- Promote startup development and entrepreneurship.
- Increase prototype development for industrial and societal applications.
- Submit collaborative proposals to AICTE, ANRF, DST, and other national funding agencies.

Conclusion

During the academic year **2025–2026**, the AICTE IDEA Lab at Girijananda Chowdhury University successfully strengthened the University's innovation ecosystem through student



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projects, faculty development programmes, workshops, prototype development, outreach activities, research support, and industry collaboration. By fostering experiential learning and multidisciplinary innovation, the laboratory has established itself as an important centre for engineering design, product development, and technology-driven education, laying a strong foundation for future innovation, entrepreneurship, and research excellence.

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