SNIST AICTE- IDEA LAB Program- One of the best Practices

AICTE IDEA LAB
Sreenidhi Institute of Science and Technology

1. Title of the Practice:
 Engaging Students in AICTE –IDEA lab, established in the campus.

2. Objective of the Practioce:
1. To encourage students for application of Science, Teschnology, Engineering and Mathematics

2.to promote enhanced learning hands on experience, learining by doing and product visualisation

3.to facilitate students Five E (Engage,Explore, Experience,Express and Excel) as desired by NEP 2020.

3. The context :

The purpose of IDEA Lab is to provide all facilities under one roof, for conversion of an idea into a prototype. With these facilities in the campus, more students and faculty will be encouraged to take up creative work and in the process, get training on creative thinking, problem solving, collaboration etc. which conventional labs are not able to. The focus will be on training students so that they become imaginative and creative and stay so at the workplaces they join. The whole idea is to transform engineering education with such a Lab in all colleges and for this they must proactively expose all students to the IDEA Lab, organize training sessions for interested students as well as support projects and by providing online learning materials.

The routine activities of IDEA Lab include:

- The Idea lab conducts training programme for second and third year students every year.
- The Idea lab makes exhibition of the projects done by the final year students to motivate and enhance the cult of engineering and science to first and second year students.
- The lab also organizes summer coaching camp for the marginalized school students.
- This is a practice to kindle the curiosity of the students to learn new things. In System Discovery training , a system is dismantled to learn its components & functions. Students are provided with a Laptop, Photocopier, FAX machine, CRO monitor, fan, CPU, wiper motor, Hydraulic Jack , an MCB etc..
- This Lab encouraging the students to develop aids for visually challenged, deaf and dumb people, differently abled people, Autism students.
- Training the students in various day to day appliances like Mobile Testing and Repair, Servicing of fan and tube light, iron box, Repair of laptop etc. where engineering concepts are involved.

4. The Practice:

The method adapted in IDEA lab provides a detailed learning to students and also reduces them to initiate a project on the basis of what they have learnt in the training./practice. To get in-depth knowledge in subjects, the practical training classes is conducted in each section of the lab which helps students to have specified learning..The Idea Lab is a function that facilitates the collection of standards and practice in Industries to develop the skills of team members and to promote them to the next level. It refers to a team, a shared facility or an entity that provides leadership, practices, research, support and training for a particular area. It is often associated with new software tools, technologies and people's network. It also focus on a particular area of research, such center may bring together the faculty members from different disciplines and provide share facilities. For effective practice, the following program schedule every Academic year : planned.

This practice has enabled SNIST in adopting a Student-Centric approach not only in learning process but also in institutional quality enhancement. It has created a platform for students to share their ideas and views on training part. Students' involvement has brought about newer and dynamic ideas into quality

enhancement of higher education.Teachers, by way of this practice, stand to gain in terms of much valuable feedback from the students on quality enhancement in practical training and innovative practices in teaching. This practice has enabled the institution to offer programs and courses that are well accepted.accepted. Also, has help create a student-centric environment in the institution.

Sr. No.	Event & Duration	Target & Batch size	Objective & Justification	Frequency/ Numbers
1	FDP (06 Days)	Faculty (20)	Faculty needs to be trained on equipment, to be able to guide students and conduct events- including those from other institutions	Twice in a year
2	Skilling Programs (06 Days)	Students (20-30)	Training in areas like electrical and electronics fabrication, embedded systems design. Embedded programming, 3D printing, robotics, welding, IOT, Machine learning, AI, bio-engineering, biomedical etc	One per quarter
3	Bootcamps (12 Days)	Faculty (05-10)	Training of faculty (including those from other institutions, spread over few weeks, continuing at workplaces, if required	Twice a year
4	Ideation workshops (03-05 Days)	Students (30-40)	To generate ideas on which students can work in the IDEA Lab, including field visits	Once in three months
5	Awareness Workshops for Industry (02 Days)	Industry participants (5-10)	Publicizing IDEA Lab among industries, to encourage them to use the facilities	Once in three months
6	Internships (2 to 6 months)	Students (15-20)	For hands-on training as part of their course-work during summer and winter vacations. Internships based on industry problems should be preferred.	As per curriculum.
7	Professional Skilling Programs (12 Days)	ITI students or class 10/12 pass students (5-10)	Welding, 3D printing, mechanical fabrication. etc	Once in a quarter
8	School Teachers Awareness Program (06 Days)	Teachers of nearby schools	Demonstration and providing hands-on experience of facilities	Twice a year (during school vacations)

9	Projects by School students	Students identified by schools (10-15)	Opportunity for school students to do projects	Once a year (as per convenience)
10	Open Day for school students (one day)	Students (class XI-XII) nominated by schools (25-30)	Exposure to facilities in IDEA Lab to ignite their minds (on Science Day/Technology Day/Teachers Day/ Engineers Day)	Once a year (as per convenience)
11	Participation in annual technical exhibitions	Nationwide IDEA labs	Technical exhibitions etc For example, Tech FEST, Mind SPARK etc. organized by renowned Institutions/ Industries etc to showcase activities/products/prototypes developed in IDEA labs	Once in a year
12	Newsletter	Nationwide IDEA labs	To disseminate information to all the labs about activities of other labs, technology issues, any interesting development etc.	Monthly/ Bi-monthly
13	Webpage	All stakeholders	For web-presence of IDEA Lab, and showcasing itself before the stakeholders and other IDEA Labs	Weekly/ Bi-weekly updation
14	Annual conference/ symposium of all IDEA labs	All IDEA Labs, DIY labs or similar labs across the nation/outside the nation also	To promote active interaction, showcase of lab activities, promote collaboration at national and international level labs	Once in a year

* Students and faculty from other colleges should be encouraged for using the facilities
*Events calendar shall have to be drawn ensuring that timings for different groups do not clash and are also convenient.
*Visit to IDEA Lab in batches, should be included in the Student Induction Program

5. Evidence of success:

It has been observed that the students have shown keen interest in understanding the quality initiatives and training programs of the lab. Many of the students have willingly participated in such activities which have given them an opportunity to envision actions embossed with quality that resulted good placements. Regular feedback has enabled the Ideas lab to add value to the existing academic , training and administrative practices and make it student –centric.

The involvement of all stake holders of the IDEAS lab from chief mentor to students who took training along with physical resources is given below.

### Chief Mentor, Faculty Coordinator and cordinator:

The Head of Institute will be the ex-officio Chief Mentor (CM) of the AICTE IDEA Lab, responsible for overall implementation of the project. He/she has to identify a dynamic faculty in the proposal itself, to serve as Faculty Coordinator (FC) and also one Faculty Co-coordinator (FCC) for day-to-day running of the Lab. The identified faculty should be dynamic, creative and go-getter, having a background in Electrical/ Electronics/ CS/ IT/ Mechanical Engineering or related fields. Faculty Coordinator shall have to mandatorily attend the Bootcamps (of 6-10 days) which AICTE will organize, to understand the establishment and operations. Three AICTE IDEA Lab Student Ambassadors must be identified by CM to assist FC & FCC in day-to-day activities, on a rotation basis for 3 or 4 months.
Students from the 3rd/ 4th year of UG or any year of PG course who show keen interest in the activities and regularly participate in them, can be nominated. Institute can frame its own set of rules for this. Upto 3 Ambassadors can be there at a time and should be rotated, maintaining gender equity.

IDEA Lab AQIS ID:	202000141
Name of the Chief Mentor:	DR. T.CH.SIVAREDDY, Principal
Name of the Faculty Coordinator:	DR. SPV SUBBA RAO,HOD ECE
Name of the Faculty Co-Coordinator:	DR.A.PURUSHOTHAM,HOD, MECH
Name of Tech Guru-1	Dr. Ramani, ECE
Name of Tech Guru-2	Dr. K.Sreenivasulu Reddy, MECH

Ideas Lab Sections:

The lab has eight different section loacated at one location namely Product design, Mechanical , 3D Printing & Prototyping, IOT Section , 3D Scanner ,PCB design and Laser cutter section. The lay out and photo graphs of each section are given below:

3D PRINTING & PROTOTYPING
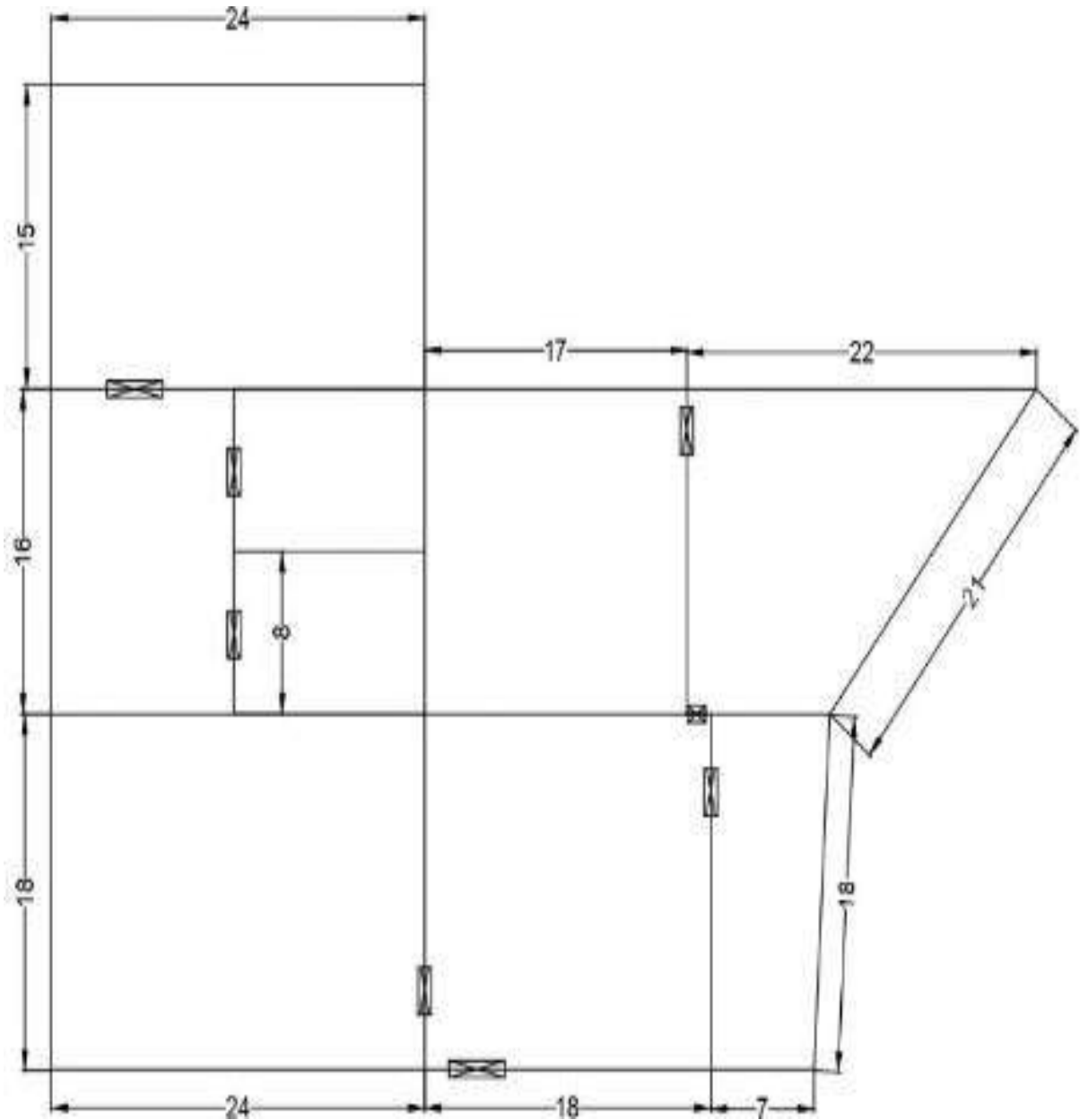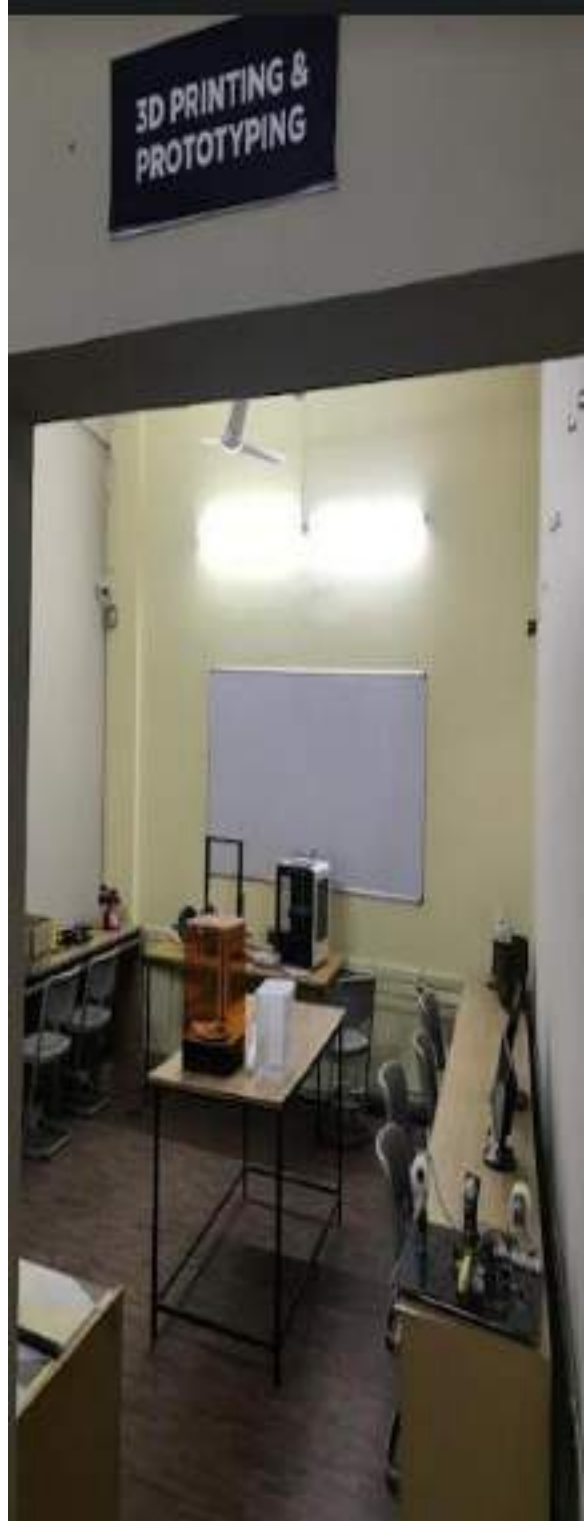
3D Scanner

Equipment Purchased:

N0	Status	Equipment Name
1	Procured	Laser Cutter
2	Procured	Vinyl Cutter
3	Procured	3D Printer
4	Ordered	3D Scanner
5	Planned	CNC Router
6	Procured	Heavy Duty Laser printer
7	Procured	Solder Station
8	Procured	Desoldering station

9	Procured	Mixed Signal Oscilloscope
	Procured	Digital storage oscilloscope
10	Procured	Signal Generator
11	Procured	Variable Power Supply
12	Procured	Benchtop Multimeter
13	Procured	PCB Milling machine
14	Procured	Vaccum Cleaner
15	Procured	Hot Air Gun
16	Procured	Measuring Equipments
17	Procured	Digital Multimeter
18	Procured	Clothes Iron
19	Procured	3D printer filaments
20	Procured	Drill bits
21	Procured	Hack Saw Blades
22	Procured	Hack Saw
23	Ordered	Cordless Drilling Machine
24	Procured	Files Set
25	Procured	Digital Vernier Caliper
26	Procured	Hot Air Blower with soldering Iron
27	Procured	Screwdriver Set
28	Procured	Vaccum Cleaner
29	Procured	Hot Air Gun
30	Procured	Micrometer
31	Procured	DC Regulated power supply
32	Procured	Oscilloscope
33	Procured	Sensor Set
34	Procured	Arduino UNO boards
35	Planned	Node MCU
36	Procured	Raspberry Pi
37	Planned	ESP32

Program Conducted:

1. 1 week internship program on Aditive Manufacturing 14/11/2022 to19/11/2022
2. 1 week internship program on Auto disc vision 360 CAM 28/11/2022 to02/12/2022
3. PCB design Techniques (Internal facultie and Students) 14/11/2022 to 18/11/2022
4. PCB design Techniques for ESD 05/01/2023 to 07/01/2023
5. 6 Days FDP on Electronic System Design Duration from : 13/03/2023 to 18/03/2023
6. Internship training on 3D Printing, Robotics & IoT programming from 04 Sep to 09 Sep 2023.

Utilization of the Faculty:

IDEA Lab is as much to be used by faculty, as students, including for their research work. They can work on their ideas independently or by involving students. They can create internship projects or practical work which require significant use of IDEA Lab and also facilities in their own departments. Working on interdisciplinary projects involving IDEA Lab would be appreciated.

6. Problems encountered and Resources Required:

The problem encountered to adoption and implementation of the IDEAS lab practice are in the form of understanding and definition of quality among the students. Students will come with varied interests and understanding on quality in training and administrative practices making it difficult to arrive at a consensus on the standards of training.

Resources would be required in terms of time spent on these exercises. A comprehensive and updated list of students profiles who took utilized the IDEA lab and tracking their career growth is also an essential resource. This would help the institution invite those that may be instrumental in giving important inputs in the process of success of IDEAS Lab and quality enhancement. A comprehensive feedback system where students can voice their concerns and rate various academic and administrative aspects of the lab is another requirement for earmarking areas for quality improvement of the lab. The working of

software and hardware tools is required to be integrated with the feedback system making it less time consuming and automated in feedback collection, processing and analysis of action taken results.

7. Notes (Optional):

Three faculty members have been undergone Idea lab training program conducted by AICTE . Dr. Ramani S, ECE, Dr. Sreenivasulu Reddy ME and Mr. Ashok, ME.They are playing key role in imparting training and conducting various work shop . Their detaila and participation certificates copies are attached here.

DR.K.SREENIVASULU REDDY   KALLAGADDA ASHOK

ATAL/2023/1696577066

Skill India

ATAL

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training and Learning (ATAL) Academy

Certificate

It is certified that **Dr. Ramani S, Associate Professor** of *Sreenidhi Institute of Science and Technology* has successfully participated & completed AICTE Training And Learning (ATAL) Academy Faculty Development Program on **Digital Manufacturing technology** at **SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE** from 11/12/2023 to 16/12/2023.

Coordinator   Bureau Head (ATAL)

No: ATAL/2022/1664520443

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training and Learning (ATAL) Academy

Certificate

This is certified that S P V SUBBARAO, Professor of SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY participated & completed successfully AICTE Training And Learning (ATAL) Academy Offline FDP on "ATAL Idea Lab Basic FDP (Hands on Training)" from 04/08/2022 to 08/08/2022 at VISVESVARAYA TECHNOLOGICAL UNIVERSITY CENTRE FOR POST GRADUATE STUDIES MUDDENAHALLI .

Advisor-I, ATAL Academy
Mamta Rani Agarwal

Coordinator

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AICTE Training and Learning (ATAL) Academy

Certificate

This is certified that K.Srinivasulu Reddy, Professor of Sreenidhi Institute of Science and Technology, Hyderabad participated & completed successfully AICTE Training And Learning (ATAL) Academy Offline FDP on "Smart Manufacturing" from 20/07/2022 to 26/07/2022 at SHRI G.S.INSTITUTE OF TECH. & SCIENCE.

Advisor-I, ATAL Academy
Mamta Rani Agarwal

Coordinator

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AICTE Training and Learning (ATAL) Academy

Certificate

This is certified that Kallagadda Ashok, Assistant Professor of Sreenidhi Institute of science and technology, Hyderabad participated & completed successfully AICTE Training And Learning (ATAL) Academy Offline FDP on "Smart Manufacturing" from 20/07/2022 to 26/07/2022 at SHRI G.S.INSTITUTE OF TECH. & SCIENCE.

Advisor-I, ATAL Academy
Mamta Rani Agarwal

Coordinator

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