ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Delhi - 110070

REPORT ON

SMVEC AICTE - IDEA LAB

(AQIS ID -IDEA202000244)

SRI MANAKULA VINAYAGAR

ENGINEERING COLLEGE

(AN AUTONOMOUS INSTITUTION)

PUDUCHERRY

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IDEA LAB PERFORMANCE

AICTE IDEA LAB

The AICTE-IDEA (Idea Development, Evaluation & Application) Labs are established across India to encourage students to apply science, technology, engineering, and mathematics (STEM) fundamentals for enhanced hands-on experience, learning by doing, and even product visualization.

Key Features of the AICTE IDEA Lab

- **State-of-the-Art Equipment:** The lab is equipped with a wide range of cutting-edge tools and technologies, including 3D printers, laser cutters, electronics workstations, and prototyping materials. This enables students to design, develop, and test their ideas with precision and efficiency.
- **Collaborative Workspace:** The lab offers a collaborative and open workspace that encourages interaction, teamwork, and knowledge sharing among students from diverse disciplines. This facilitates interdisciplinary collaboration and the cross-pollination of ideas.
- **Mentorship and Guidance:** The lab provides access to experienced mentors, faculty members, and industry experts who offer guidance and support to students throughout their innovation journey. This ensures that students receive the necessary technical and business expertise to develop their ideas successfully.
- **Training and Workshops:** The lab conducts regular training programs and workshops on various aspects of innovation, entrepreneurship, and design thinking. These programs equip students with the skills and knowledge required to navigate the challenges of bringing their ideas to market.
- **Incubation Support:** The lab offers incubation support to promising student startups, providing them with resources, mentorship, and networking opportunities to accelerate their growth and development.
- **Industry Partnerships:** The lab collaborates with industry partners to provide students with real-world problem-solving opportunities and exposure to industry trends and practices. This enhances the relevance and applicability of student projects.
- **Focus on Emerging Technologies:** The lab emphasizes emerging technologies such as artificial intelligence, the Internet of Things, and robotics, enabling students to explore and innovate in these cutting-edge fields.
- **Intellectual Property Support:** The lab assists students in protecting their intellectual property and navigating the patenting process.
- **Showcase and Exhibition Opportunities:** The lab organizes regular events and exhibitions to showcase student projects and innovations to a wider audience, including potential investors and industry partners.

SMVEC AICTE IDEA LAB

AICTE has launched a scheme to establish AICTE-IDEA (Idea Development, Evaluation & Application) Labs in its approved institutions to encourage students to apply Science, Technology, Engineering, and Mathematics (STEM) fundamentals for enhancing hands-on experience and learning by doing. The All-India Council for Technical Education (AICTE) announced the names of 49 institutions that were selected for establishing AICTE IDEA (Idea Development, Evaluation & Application) Lab in their campus. IDEA Labs are co-funded by AICTE and industry/institution under the Scheme.

Under this scheme, a grant of Rs. 1.23 Crore is sanctioned, of which Sri Manakula Vinayagar Engineering College received a grant of Rs. 47.7 lakhs from AICTE, and the remaining amount of Rs. 75.30 lakhs are contributed from the management to establish SMVEC AICTE-IDEA Lab. This IDEA Lab is a common facility of the institution that will make engineering graduates more imaginative and creative, besides providing training in 21st-century skills such as critical thinking, problem-solving, research, collaboration, communication, lifelong learning, etc. IDEA Lab can empower the students and faculty to "engage, explore, experience, express and excel", addressing the need of new age learning. IDEA Lab would serve as an infrastructure for faculty to take up and promote multidisciplinary education and research. Accordingly, faculty would be encouraged to get trained in this Lab and strive for creating problems/ projects/ internships in their own subjects/ disciplines and mentor the students.

Objective of SMVEC IDEA Lab

- All facilities under one roof for the conversion of ideas into a prototype.
- Training in the 21st century skills- critical thinking, problem-solving, collaboration etc.
- Making engineering students more curious, imaginative and creative; engineering education more engaging.
- IDEA lab will be centered around activities and events to promote multidisciplinary education and research.

Training offered in IDEA Lab

- Training for faculties: FDP
- Training for students: Skilling Program, Ideation workshop, Internship
- Industry Members: Awareness workshop
- ITI students: Professional Skilling Program
- School Students: Projects by school students
- School teachers: Awareness Program

Outcome of AICTE – IDEA Lab

AICTE-IDEA (Idea Development, Evaluation & Application) Lab "encouraging students for application of science, technologies, engineering and mathematics (STEM) fundamentals towards enhanced hands-on experience, learning by doing and product visualization".

Sri Manakula Vinayagar Engineering College is an autonomous institution offering a one-credit course titled "Design Thinking and IDEA LAB" to all programs under Regulation 2023

Laboratory Section of IDEA Lab

SMVEC AICTE-IDEA Lab established six laboratories such as Electronic Product Design, Additive Manufacturing, Internet of Things, Mechanical Section, with state of art facilities

Electronic Product Design Lab

Product Design Lab section is a dedicated space designed to foster innovation, practical learning, and research in electronics and embedded systems. This section provides student, researchers, and educators with the tools and environment needed to develop, test, and prototype electronic systems, bridging the gap between theoretical concepts and real-world applications.

Equipments:

Basic Instruments: Includes oscilloscopes, function generators, multimeters, and power supplies.

Advanced Instruments: Features spectrum analyzers, logic analyzers, network analyzers, and signal generators.

Prototyping Tools: Soldering and rework stations, and CNC machines for creating and testing PCB.

Components and Accessories:

A comprehensive inventory of passive and active components, connectors, cables, breadboards, and PCBs.

Software Tools:

- Design and Simulation: Tools like SPICE simulators, MATLAB, Simulink, and LabVIEW for system design and analysis.
- PCB Design: Altium Designer, KiCad, and Eagle for creating circuit boards.

Additive Manufacturing lab

An Additive Manufacturing Lab is a facility equipped for the production of components or products using additive manufacturing (AM) technologies, often referred to as 3D printing. AM labs often aim to advance the understanding and capabilities of additive manufacturing technologies. This may involve fundamental research into new materials, processes, and techniques, as well as applied research to solve specific challenges in various industries. AM labs serve as educational hubs where students, researchers, and industry professionals can learn about additive manufacturing through hands-on experience. : One of the primary applications of AM is rapid prototyping and iterative design. AM labs provide facilities for designers and engineers to quickly iterate through design concepts, produce prototypes, and test functional prototypes for form, fit, and function.

Equipments

FDM 3D Printer-Ender 3 V2, Thunder Pro, Creatbot | SLA 3D Printer | SLA Curing Machine | 3D Scanner

Softwares Used

Modeling software

- Tinker Cad
- Onshape
- Fusion 360
- CATIA
- SOLID Works

Slicing software

- Ultimaker Cura
- Simplify 3D
- Creatware
- PrusaSlicer

3D Scanning software

- Revo Scan
- Revo Studio

Internet of Things Laboratory

An IoT (Internet of Things) laboratory is a space within Idea Lab dedicated to researching, developing, and testing IoT devices and applications. It provides a unique opportunity to explore the possibilities of IoT technology and to develop new and innovative solutions that can make a positive impact on society.

Components and Accessories:

- Microcontrollers and Development Boards: Arduino (Uno,Mega,Nano), Raspberry Pi, ESP8266/ESP32, BeagleBone Black.
- Sensors and Actuators: Actuators, Motion Sensors, Temperature and Humidity Sensors, Gas Sensors, Proximity Sensors
- Communication Modules: Wi-Fi Modules, Bluetooth Modules, RFID Modules.

Simulating Tools:

Tools like Tinkercad, Proteus are used for Arduino circuit simulation and microcontroller programming.

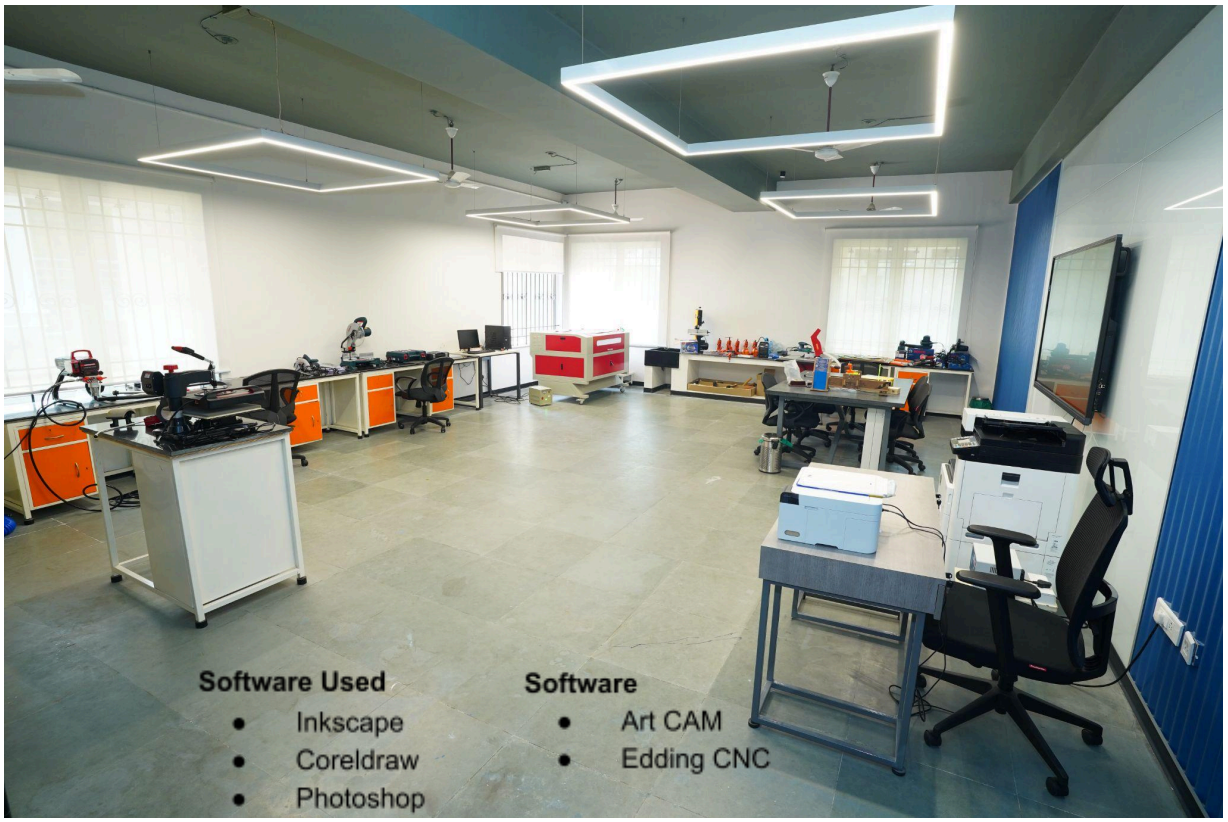
Software Tools:

- Integrating Development Environments (IDEs): Arduino IDE, PlatformIO, Visual Studio Code
- Cloud Platforms: Platforms such as AWS IoT, Google Cloud IoT, Microsoft Azure IoT are used for IoT device management and applications.
- Development Tools: Blynk tool is used for building mobile and web applications for the Internet of Things.

Mechanical Section

Laser cutting is a highly precise manufacturing technology that uses a focused laser beam to cut materials with extreme accuracy. Create complex shapes and designs quickly and easily by using Inkscape software, it has become an essential tool for many industries and creative professionals. The process involves directing a high- powered laser beam onto the material, which melts, burns, or vaporizes the material, leaving a clean and precise cut.

Laser engraving and cutting Machine for, Non-Metal such as: Acrylic, Soft wood, Paper, Cardboard, Cloth, Leather, Plastic, PVC, Rubber, Ceramic, MDF Plywood, Flat Glass, ABS Sheet (Dual Color)



CNC Wood Router

A CNC wood router lab is a specialized facility equipped with CNC (Computer Numerical Control) wood router machines for educational or research purposes. CNC wood routers can perform a wide range of tasks including cutting, carving, engraving, and shaping wood

Seminar Hall

Mentor, Coordinators and Tech-Gurus

Dr. V.S.K. Venkatachalapathy
Director cum Principal
Chief Mentor

Dr. K. Velmurugan
Dean Research
Coordinator

Dr.P. Raja
Professor - ECE
Co-Coordinator

Tech-Gurus

Dr. L. Martin
Associate Professor/
Mechanical

Dr. S. B. Lenin
Associate Professor/ ECE

Dr. P. Arunagiri
Associate Professor/ ECE

Dr. S. Dhivya
Assistant Professor/ ECE

Dr. P. Jayakumar
Associate Professor/
Mechanical

Dr. S. Ganeshkumaran
Associate Professor/ EEE

SMVEC AICTE IDEA Lab Inauguration

Sanctioned Date	Inauguration Date
17-06-2021	16-08-2022

SMVEC AICTE IDEA Lab Inaugurated by Shri. N. Rangaswamy, Chief Minister of Puducherry


SMVEC


AICTE

AICTE IDEA LAB Monitoring Framework

Sl. No.	Parameters	Numbers	Points
1	Host Institute Faculty Members	410	102
2	Host Institute Students	5049	504
3	Host Institute Alumni	701	701
4	Other Institute Faculty Members	37	18
5	Other Institute Student	231	46
6	Industry	0	0
7	School Teachers	48	48
8	School Learners	880	176
9	Entrepreneur/start-up	1	1
10	Events	1546	15460
11	Patent	0	0
12	Award received	12	600
13	Projects completed by using AICTE-IDEA Lab	56	56
14	Hand Holding an AICTE IDEA Lab in Network	0	0
15	Investment in AICTE-IDEA Lab	9995419	495
16	Operational Hours of the AICTE- IDEA Lab (Every day)	74	0
		Total Points	18207

Events Summary

Sl. No	Event Type	Numbers
1.	Skilling Program	187
2.	Professional Skilling Program	12
3.	Faculty development Program	14
4.	Ideation Workshop	20
5.	Internship Program	2
6.	Boot Camp	1
7.	Awareness Program	3
8.	Open Day for School	3
	Total Events	242

Target Audience Summary

S.No	Target Audience	Number of Events
1.	Host institute Faculty	15
2.	Other institute Faculty	1
3.	Host institute Technical Assistants	1
4.	School Teachers	2
5.	Host institute PG students	2
6.	Host institute students	190
7.	Alumni students	1
8.	Other institute students	6
9.	Polytechnic students	2
10.	ITI students	1
11.	School Students	21
	Total Events	242

Budget and Fund Flow

Total Project Cost. Rs. (in lakh)	Contribution Rs. (in lakh)					
	AICTE			Industry/ Institute		
	NR	R	Total	NR	R	Total
123.10	32.83	15.00	47.83	32.83	42.45	75.28

**NR – Non Requiring Expenditure, R – Recuring Expenditure

- **Received First Instalment – ₹ 38.264 Lakhs**
- **Second Installment yet to be received ₹ 9.566 Lakhs** (after Submission of the utilisation certificate)

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Project Completion Report of IDEA Lab

AICTE PID : 1- 4516101

File No : AICTE/IDEA202000244/2021 **Date of Sanction: 17.06.2021**

1.	Project Coordinator	:	Dr . K. Velmurugan, Professor, Dean R&D Sri Manakula Vinayagar Engineering College
2.	Date of Appointment of the Project Coordinator	:	17-06-2021
3.	Duration of the Project	:	2 Years (2021-22 & 2022-23)
4.	Total Budget of the Project	:	₹ 1,23,1000 (Rupees one Crore Twenty Lakh Ten Thousand Only) (Non- Recurring: ₹ 6565000, Recurring: ₹ 5745000)
5.	Total Institute Contribution 4244000/-)	:	₹ 7527000 (Non- Recurring: ₹ 3283000, Recurring: ₹
6.	Total AICTE Contribution	:	₹ 4783000 (Non- Recurring: ₹3283000, Recurring: ₹ 1500000)
7.	Amount Released by AICTE	:	₹ 3826400 (1st Installment) (Rupees Thirty Eight Lakh Twenty Six Thousand Four Hundred Only) (Non- Recurring: ₹ 2626000, Recurring: ₹ 1200000)

8. Details of Expenditure

A. NON-RECURRING

FY 2021 – 2022

S. No	Name of the Equipment	Quantity	Cost (₹)	AICTE Sl. No
1	Desktop PCB Making and Engraving Machine	1	657968	MESN-27
2	Heavy duty Laser Printer	1	330200	MESN-26
3	3D Printer Fused deposition	1	483800	MESN-03
Total			1471968	

FY 2022 – 2023

S. No	Name of the Equipment	Quantity	Cost (₹)	AICTE Sl. No
1	CNC Wood Router	1	1180000	MESN-05
2	Laser Engraving and cutting Machine	1	336300	MESN-01
3	BEETECH 706 Soldering Station	2	16166	MESN-10
4	Raspberry Pi 4 computer 4GB RAM	1	12390	OCSN-04
5	Raspberry Pi Camera V2	2	5900	OCSN-04
6	Beagle Bone Black	1	5782	OCSN-06
7	ESP Camera	4	2500	OCSN-08
8	Aeropro Airless Paint sprayer	1	28910	OESN-02
9	Bosch Milter Saw Machine	1	19942	MTGMTSN-23
10	Black hawk clamping kit 16-12mm	1	15104	NTSN-01
11	Maf Pro Band saw	1	14750	MTGMTSN-13
12	Maf pro table saw	1	13570	MTGMTSN-13
13	MSI Air compressor 2Hp 50L	1	12626	MTSN-10
14	Bullwark pipe vice self-locking hinged 2"	5	10825	NTSN-04
15	Rex Bench Grinder 1/2 hp single phase	1	10502	MESN-09
16	Bullwark c-clamp-drop forged 6"carbon steel powder	10	9830	NTSN-01
17	Cenx welding machine portable MMA201XP	1	8968	MESN-15
18	3M Nose Mask 6200	2	7798	MCSN-05
19	Bosh screwdriver- cordless 12 volts	1	7508	MTETSN-04
20	Bosch Circular Saw machine 7 GKS140	1	7434	MTGMTSN-08
21	Fore Impact wrench Pneumatic 1/2"	1	7329	MESN-14
22	Bosch Die Grinder	1	7257	MESN-09
23	Cros Cable Cutter	1	6844	MESN-14
24	Bosh Drilling Machine GSB 13RE Kit	1	6372	MTSN-03
25	Bosch Sander Electric 5", 250watts,	1	6303	MTGMTSN-22

S. No	Name of the Equipment	Quantity	Cost (₹)	AICTE Sl. No
26	Bosh orbital Sander GSS2300	1	5989	MTGMTSN-22
27	Bosh Impact Drill Electric 10 capacity 450 watts	2	5326	MESN-08
28	Kency digital vernier caliper 200 mm	1	5074	MCSN-03
29	Bosh Jig saw Machine GST650	1	4805	MTGMTSN-07
30	Bosh Marble cutter - Electric GDC120	1	3884	MESN-14
31	X Distance meter 40 Mtr	1	3469	MTGMSN-27
32	MTECH Clamp meter AC 1000 AC Amps 750 volts	1	2788	NTSN-02
33	Bosh Blower Electric 620 watts	1	2596	MTETSN-04
34	Bosch angle grinder electric 4"	1	2504	MESN-09
35	Stanley hot airgun Electric 2000 watts	1	2495	MCSN-02
36	Star pop Riveter Bolt Cutter type, heavy duty	1	2495	MESN-14
37	Air Hose nylon 8mm (5/16") 30 mt	1	2000	ETSN-10
38	HTC Infrared Thermometer 50 to 550 degree	1	1451	MCSN-08
39	Racer stopwatch digital	5	1350	MCSN-08
40	Metravi socket polarity tester 16 Amps 250 volts	1	961	MCSN-08
41	Skole Metal Marker Electric Adjustable Depth Marking	1	631	MCSN-08
42	Resin Printer and ENDER3V2	4	126420	MESN-03
43	Sublimation, Vinyl Printing Machine	1	16499	MESN-02
44	Sublimation Printer	1	31860	MESN-02
45	Curing and washing Kit for resin printer	1	36580	MESN-03
46	REVOPOINT MINI 3D SCANNER	1	156380	MESN-04
47	Tools purchased in the academic year attached below	Enclosed	186831	MT
Total Amount (₹)			**23,63,298**	

List of Tools Purchased (Sl. No 47 of above table)

S. No	Name of Tools	Quantity	Cost	AICTE Sl. No
1	Multimeter DM 98 DMM	2	4602	ETSN-23
2	Drilling Motor	4	1040	MESN-07
3	Drill Chuck	4	660	MCSN-27
4	Cutting Plier	2	566	MTSN-03
5	Screwdriver set T/P 802	2	520	MTSN-04
6	Nose Plier	2	472	MTSN-03
7	Glue gun	2	472	ETSN-09
8	Desoldering Pump	2	236	MESN-11

S. No	Name of Tools	Quantity	Cost	AICTE Sl. No
9	Wire Striper	5	235	ETSN-14
10	Nipper Plier	1	83	ETSN-12
11	Rhino Tools Trolley 7 drawers 196 pcs Tool with insert tray	1	45996	MTSN-20
12	Kency Outside Micrometer 75 to 100 mm	5	12095	ETSN-08
13	Kency Outside Micrometer 50 to 75 mm	5	10620	ETSN-08
14	Talbro Double Ring spanner 12pcs set	5	9915	MTSN-20
15	Kency Outside Micrometer 25 to 50 mm	5	9735	ETSN-08
16	End Mill Solid Carbide - Flat 12mm dia x 25 x 83	2	9120	consumable
17	Kency Outside Micrometer 0 to 25 mm	5	8555	ETSN-08
18	craftshand socket set-hex 24 pcs	2	5748	NTSN-01
19	Talbro Double open-end spanner 12pcs set	5	5350	MTSN-22
20	Freemeans spirit level with magnet	5	4905	MTSN-31
21	Aerospace Vernier Caliper 150mm/6"	5	3540	MTSN-30
22	Bullwark sledge Hammer 4lb	5	3200	MTSN-15
23	End Mill Solid Carbide - Flat 10mm dia x 21 x 72	2	3074	MCSN-26
24	Bullwark nylon hammer 30mm(1 1/4")	5	3020	MTSN-14
25	Bullwark tin cutter 12" drop forged heavy duty	5	2855	NTSN-02
26	Bullwark sledge Hammer 3lb	5	2370	MTSN-15
27	Bullwark Rubber hammer 50mm, 140gms	5	2360	MTSN-14
28	Laser try square workshop grade 8"	5	2150	MTSN-17
29	Bullwark Hacksaw Frame HS-02	5	2035	MTSN-01
30	Bullwark claw Hammer 500gms	5	1595	MTSN-14
31	LED intensity adjustable Flash light	2	1548	MCSN-28
32	End Mill Solid Carbide - ball nose long 8mm dia x 25x75,	1	1546	
33	X file set 6" 6 Pcs with ergonomic plactic with rubber handle	2	1508	MTSN-09
34	Beck step Drill 4 To 32mm, 4 to 20mm, 4 to 12mm 3 pcs	1	1291	MCSN-25
35	Bullwark water pump plier 10" 7 position box joint	5	1240	ETSN-12
36	End Mill Solid Carbide - Flat 6mm dia x 19 x 57	2	1190	
37	Golden Bullet Jig Saw Blade144 BOS	15	1125	saw
38	Router bit set	1	1121	MTSN-37
39	End Mill Solid Carbide - Flat 5mm Dia x 16x50	2	992	
40	End Mill Solid Carbide - ball nose long 5mm dia x 25x75,	1	967	
41	CIC screwdriver set 41 Pcs Bit and socket set	1	933	MTSN-04
42	Sun needle file set steel 12 pcs	2	862	

S. No	Name of Tools	Quantity	Cost	AICTE Sl. No
43	Taparia Alen key short flat 10pcs	3	849	Mech tool
44	Taparia Combination plier 8 carbon steel	3	810	ETSN-12
45	Freemeans Measuring Tape steel 5mr length	5	735	MTSN-27
46	Bullwark Junior saw Hacksaw Frame 6"	5	715	MTSN-01
47	Multitec Alen Key short flat 9 pcs	3	708	MTSN-19
48	Laser Try square workshop grade 12"	1	650	Mech tool scale
49	End Mill Solid Carbide - Flat 3mm Dia x 38	2	644	
50	Taparia Screw driver set 840	2	626	MTSN-04
51	Zupper piper cutter for PVC 25 mm	1	499	ETSN-02
52	Taparia nose plier 6"	2	486	ETSN-12
53	Norton Mounted point stone	1	472	ETSN-21
54	Bullwark utility knife- ABS body 18mm	2	450	ETSN-02
55	Kristeel Stainless steel ruler40"/1000	1	397	MTSN-29
56	Magadh Circlip Plier External Bent 8 1/2", Range	1	388	ETSN-12
57	Magadh Circlip Plier Internal Straight 8 1/2", Range	1	388	ETSN-12
58	Magadh Circlip Plier External Straight 8 1/2", Range	1	388	ETSN-12
59	Magadh Circlip Plier Internal Bent 8 1/2", Range	1	388	ETSN-12
60	Kristeel Stainless steel ruler12"/300	5	375	Steel ruler
61	X screw extractor set 5 pcs set	1	357	MTSN-04
62	Eagle Carpentry chisel Flat 6mm, Hardened Alloy steel	5	340	MTSN-02
63	Tyre air pressure gauge 2 1/2" dial	1	339	ETSN-10
64	Taparia Pincer 8"	1	330	MTSN-03
65	Magadh circlip plier External bent 7"Range 19 to 60mm,	1	248	ETSN-12
66	Magadh circlip plier Internal bent 7"Range 19 to 60mm,	1	248	ETSN-12
67	Magadh circlip plier External straight 7"Range 19 to 60mm,	1	248	ETSN-12
68	Magadh circlip plier internal straight 7"Range 19 to 60mm	1	248	ETSN-12
69	Peak magnifier with direction compass	2	238	ETSN-01
70	Magadh circlip plier External bent 5"Range 8to 25mm,	1	227	ETSN-12
71	Magadh circlip plier External straight 5"Range 8 to 25mm,	1	227	ETSN-12
72	Magadh circlip plier internal straight 5"Range 8 to 25mm,	1	227	ETSN-12
73	Magadh circlip plier Internal bent 5"Range 8 to 25mm,	1	227	ETSN-12
74	BUllwark oil can-spring lever type	2	226	tools
75	bosch cut off wheel 14"	1	159	MTSN-06

S. No	Name of Tools	Quantity	Cost	AICTE Sl. No
76	X glass cutter	1	149	ETSN-21
77	Pro Cut hole saw HSS - kit 6 pcs set	1	117	MTSN-08
78	Bosch DC wheel 4"	1	46	MTSN-06
79	Twin flap wheel abrasive 4"	1	35	
80	wire stripper	10	1180	ETSN-14
Total			186831	

FY 2023 – 2024

S. No	Name of the Equipment	Quantity	Cost (Rs)	AICTE Sl. No
1	Digital Storage Oscilloscope	5	165200	MESN-21
2	Bench top multimeter	2	115640	MESN-24
3	PCB drilling machine with stand	5	70800	MESN-27
4	Digital Storage Oscilloscope 100MHz	1	69065	MESN-21
5	Solder Station	10	68440	MESN-10
6	Dual Regulated power Supply	5	44250	ETSN-17
7	Multi output power supply	2	39648	MESN-23
8	Function Generator 3MHz	3	38586	MESN-22
9	DEsoldering M/C Hot air soldering rework station	2	25724	MESN-11
10	Digital Multimeter	10	10620	MCSN-06
11	TE-801 PCB soldering iron stand holder	10	10620	MESN-18
12	PCB and Antenna Fabrication Machine	1	1340480	MESN-27
13	Vinyl Printing and Cutting Machine	1	828360	MESN-02
Total			1999073	

FY 2024 – 2025

S. No	Name of the Equipment	Quantity	Cost (Rs)	AICTE Sl. No
1	Vinyl Printing and Cutting Machine	1	828360	MESN-02
Total			828360	

Summary of Non- Recurring Expenditure

Academic Year	Amount (₹)
FY 2021 – 2022	14,71,968
FY 2022 – 2023	23,63,298
FY 2023 – 2024	19,99,073
FY 2024 – 2025	8,28,360
Total (A)	66,62,699

B. Recurring (Events, Service charges, etc.)

FY 2021 – 2022

Sl. No	Event Type	No. of Events	Cost per Event	Total Cost (₹)
1.	Skilling Program	1	10000	10000
2.	Professional Skilling Program	0	21600	0
3.	Faculty development Program	1	21000	21000
4.	Ideation Workshop	0	30000	0
5.	Internship Program	0	50000	0
6.	Boot Camp	0	50000	0
7.	Awareness Program	0	2000	0
8.	Open Day for School	0	2000	0
Total Events		2		**31000**

FY 2022 – 2023

Sl. No	Event Type	No. of Events	Cost per Event	Total Cost (₹)
1.	Skilling Program	39	10000	390000
2.	Professional Skilling Program	05	21600	108000
3.	Faculty development Program	03	21000	63000
4.	Ideation Workshop	05	30000	150000
5.	Internship Program	02	50000	100000
6.	Boot Camp	02	50000	100000
7.	Awareness Program	01	2000	2000
8.	Open Day for School	01	2000	2000
Total Events		58		**915000**

List of Consumables Procured for the events (FY 2022 – 2023)

S.No	Consumables	Quantity	Cost (Rs)	AICTE Sl. No
1	Arduino UNO / Cable	6	3894	MCSN-29
2	Sensor Kit	3	3894	MCSN-28
3	Field Effect Transistor BFW 10	20	2120	MCSN-28
4	ESP 8266 Board	6	1770	MCSN-28
5	20V 5amp Power supply	2	1132	MCSN-28
6	Transistor BC 107	50	900	MCSN-28
7	IC NE 565	5	825	MCSN-28
8	16×2 LCD Display	5	710	MCSN-28
9	Glue Stick	55	605	MCSN-31
10	Multi core wire 14/36	1	472	ETSN-14
11	LED (50g)	5	415	MCSN-28

S.No	Consumables	Quantity	Cost (Rs)	AICTE Sl. No
12	microSDHC UHS-I Card 16GB	1	413	MCSN-28
13	Jumper Wire	6	354	MCSN-28
14	Micro USB Cable	6	354	MCSN-29
15	5V 3 amps	1	354	MCSN-35
16	Fuse 1amp, 2amp, 0.5 amp	1	354	MCSN-28
17	PCB Board Copper	10	350	MCSN-28
18	Bread Board	5	345	MCSN-28
19	PCB Etching - FERRIC CHLORIDE, SOLUTION	5	295	MCSN-28
20	HDMI to MICO Cable	1	212	MCSN-29
21	Positive Voltage regulator IC 7805-7809-7812	15	180	MCSN-28
22	Negative Voltage regulator IC 7905-7909-7912	15	180	MCSN-28
23	7 segment display Anode/cathode	20	160	MCSN-28
24	Diode OA 79	20	100	MCSN-28
25	1/4 watt Resistor	1	71	MCSN-28
26	Flux	5	60	MCSN-28
27	Safeboy Ear Muff Industrial Quality	5	2090	safety
28	Pawel PU Coil Hose with fittings	1	1652	ETSN-10
29	Welding Goggles PE-10216G	5	785	safety
30	Non-Woven Wheel 8x3/4"	1	767	MESN-17
31	PVC pad 5"	1	767	MCSN-22
32	Safety Glasses PE-10214-C	20	600	MCSN-32
33	Golden Bullet TCS Saw Blade	3	513	MCSN-32
34	Body Pisto; Grip, Leak proof valve, 3mm Nozzle,	1	510	ETSN-10
35	Face shield Long PE-10227	2	496	MESN-15
36	Leather gloves 14"	2	446	MCSN-05
37	Cotton knitted Gloves	10	220	MCSN-05
38	PVC padnut	1	142	MCSN-22
39	Bullwark utility knife- spare blade 18mm	2	138	MESN-14
40	PU connector	2	118	ETSN-10
41	Safeboy safety goggles polyurethane	1	118	safety
42	Titus hose clamp	1	74	NTSN-01
43	Norton abrasive coated disc 5"60 grit aluminum	1	62	MESN-14
44	PLA 1.75 mm filament	4	4476	MCSN-09
45	Creality PLA Filament	6	8802	MCSN-09
46	Electronics consumables	61	60085	MCSN-28
47	Electronics Consumables for Project	17	4709	MCSN-28
Total			**108089**	

FY 2023 – 2024

Sl. No	Event Type	No. of Events	Cost per Event	Total Cost (₹)
1.	Skilling Program	76	10000	760000
2.	Professional Skilling Program	06	21600	129600
3.	Faculty development Program	05	21000	105000
4.	Ideation Workshop	08	30000	240000
5.	Internship Program	00	50000	0
6.	Boot Camp	01	50000	50000
7.	Awareness Program	00	2000	0
8.	Open Day for School	00	2000	0
Total Events		96		**1284600**

List of Consumables Procured for the events (FY 2023 – 2024)

S.No	Consumables	Quantity	Cost (Rs)	AICTE Sl. No
1	Beagle Bone AI for Artificial Intelligence based Application	5	116820	MCSN-28
2	Rasberry Pi-4 4GB RAMWITH accessories	5	106200	MCSN-28
3	Wireless development module for Wi-Fi,Bluetooth	5	34220	MCSN-28
4	Arduino MEGA development board with cable	10	27140	MCSN-28
5	Rasberry Pi-4-night vision camera module	5	16520	MCSN-28
6	Arduino UNO Development board with USB cable	10	9440	MCSN-29
7	copper clads single side and double side	50	8850	MCSN-28
8	37 in one sensor kit package	5	8850	MCSN-28
9	ESP8266 NODE MCU development board with cable	10	5660	MCSN-28
10	ESP 32 CAM development board with 2MB camera	5	4425	MCSN-28
11	5V/10A four channel relay card	10	3420	MCSN-28
12	Bluetooth module HC-05	10	3300	MCSN-28
13	PIR motion detector sensor module HC-SR501	20	2920	MCSN-28
14	1000 RPM -12V centre shaft DC geared motor	10	2240	MCSN-28
15	L298 2A dual motor driver module with PWM control	10	2130	MCSN-28
16	L293D motor driver shield for Arduino	10	2130	MCSN-28
17	Soil moisture sensor module	20	1900	MCSN-28
18	ultra sonic sensor	10	1770	MCSN-28
19	5V/10A single channel relay card	10	1770	MCSN-28
20	Tower pro SG90 servo-9 gms mini/micro servo motor	10	1770	MCSN-28
21	Ultra sonic sensor HC-SR 04	10	1420	MCSN-28
22	PCB mate drill bit	2	1416	MCSN-24
Total			**364311**	

FY 2024 – 2025

Sl. No	Event Type	No. of Events	Cost per Event	Total Cost (₹)
1.	Skilling Program	72	10000	720000
2.	Professional Skilling Program	00	21600	0
3.	Faculty development Program	05	21000	105000
4.	Ideation Workshop	07	30000	210000
5.	Internship Program	00	50000	0
6.	Boot Camp	00	50000	0
7.	Awareness Program	00	2000	0
8.	Open Day for School	02	2000	4000
Total Events		86		**1039000**

List of Consumables Procured for the events (FY 2024 – 2025)

S.No	Consumables	Quantity	Cost (Rs)	AICTE Sl. No
1	Acrylic Sheet	1 set	160000	MCSN-10
Total			**160000**	

Summary of Recurring Expenditure

Academic Year	Amount (₹)
FY 2021 – 2022	31,000
FY 2022 – 2023	10,23,089
FY 2023 – 2024	16,48,911
FY 2024 – 2025	11,99,000
Total (A)	39,02,000

Summary of Recuring Expenditure

Expenditure towards the organizing the Events	₹ 32,69,600
Consumables	₹ 6,32,400
Total (B)	₹ 39,02,000

Gross Total (A and **B):** Rs. 66,62,699 + Rs. 39,02,000 = **Rs. 1,05,64,699**

9. Future Plans for utilizing the equipment's and/or facilities

The AICTE IDEA Lab is equipped with state-of-the-art technology and facilities designed to foster innovation and creativity in various fields. The following plans outline how these resources will be utilized to advance education, research, and development:

- **Enhanced Learning Experiences**
- *Workshops and Training Programs*: Conduct regular workshops and hands-on training sessions for students and faculty on cutting-edge technologies such as 3D printing, robotics, IoT, and AI. This will bridge the gap between theoretical knowledge and practical application.
- *Curriculum Integration*: Integrating AICTE IDEA Lab Equipment into the Academic Curriculum Across All Engineering Disciplines. To leverage the AICTE IDEA Lab facilities effectively, we will integrate its use into the academic curriculum across all engineering disciplines through a one-credit course titled "Design Thinking and IDEA Lab." This course will incorporate hands-on lab projects to provide experiential learning opportunities, fostering a deeper understanding of engineering principles through practical application.

- **Research and Development**
    - *Innovative Projects:* Encourage students and researchers to undertake innovative projects that leverage the lab's facilities. This includes developing prototypes, conducting experiments, and validating new concepts in areas like smart devices, sustainable technologies, and advanced manufacturing.
    - *Collaborative Research:* Partner with industry and other academic institutions to collaborate on research projects. The lab can serve as a hub for interdisciplinary research, bringing together experts from different fields to solve complex problems.
- **Entrepreneurship and Start-ups**
    - Incubation Support: Provide support to start-ups and entrepreneurial ventures by giving them access to lab facilities for developing and testing their products. This can include mentorship programs, business planning assistance, and networking opportunities.
    - Prototyping and Testing: Facilitate the development of prototypes and conduct rigorous testing of new products. The lab's advanced tools can help entrepreneurs refine their ideas and bring them closer to market readiness.
- **Community Engagement**
    - *Outreach Programs*: Organize community outreach programs to educate and inspire the next generation of innovators. This can include STEM camps for school students, maker fairs, and public demonstrations of lab capabilities.
    - *Skill Development*: Offer skill development courses for local communities, including vocational training and upskilling programs. This will help in building a skilled workforce that can contribute to regional development.
- **Sustainable Practices**
    - *Green Innovations*: Focus on projects that promote sustainability and environmental conservation. Utilize the lab's resources to develop eco-friendly technologies and solutions that address local and global environmental challenges.

- *Resource Optimization*: Implement best practices for resource optimization within the lab itself, such as energy-efficient operations, recycling of materials, and minimizing waste.

- **Continuous Improvement**
  - *Feedback Mechanism*: Establish a robust feedback mechanism to continuously assess and improve the utilization of lab facilities. Regularly gather input from students, faculty, and industry partners to enhance the lab's offerings.
  - *Upgrading Facilities*: Keep the lab facilities up-to-date with the latest technological advancements. Plan for periodic upgrades and expansions to ensure that the lab remains at the forefront of innovation and technology.

By strategically leveraging the equipment and facilities of the AICTE IDEA Lab, we aim to create a dynamic environment that not only supports academic excellence and research but also fosters innovation, entrepreneurship, and community development. These efforts will contribute to building a vibrant ecosystem that nurtures creativity and drives socio-economic growth.

10. Whether there is any Deviation from the Purpose for which Grant was Released. If so, Details of Amount to be Given

After a thorough evaluation of the usage of grant funds and the activities carried out in the AICTE IDEA Lab, it has been determined that there has been no deviation from the purpose for which the grant was released. All funds have been utilized in strict accordance with the objectives outlined in the grant agreement.

Evaluation Criteria

- *Purpose of the Grant*: The specific objectives and intended uses as stipulated in the grant agreement were to establish and operate the AICTE IDEA Lab, focusing on fostering innovation, enhancing learning experiences, and promoting research and development through advanced technological facilities.
- *Expenditure Reports*: Detailed financial reports and records of expenditures made using the grant funds.
- *Activity Reports*: Documentation of activities and projects carried out with the grant funds, including outcomes and deliverables.

Assessment Findings

Purpose of the Grant: The grant was released to support the establishment and operation of the AICTE IDEA Lab, aimed at:

- Fostering innovation and creativity in various fields.
- Enhancing learning experiences for students through hands-on projects.
- Promoting research and development using advanced technological facilities.
- Encouraging interdisciplinary collaboration and practical application of theoretical knowledge.

Expenditure and Activity Reports

Expenditure Reports:

- Funds were allocated and spent as planned for purchasing lab equipment such as 3D printers, robotics kits, IoT devices, and other necessary tools.
- Expenses were recorded for training programs and workshops conducted for both faculty and students.
- Costs related to the development of curriculum materials and the integration of lab activities into various engineering courses were documented.
- Operational costs, including maintenance of lab facilities and utilities, were within the allocated budget.

Activity Reports:

- Workshops and training sessions were conducted regularly, adhering to the planned schedule.
- Lab activities were successfully integrated into the curriculum across multiple engineering disciplines.
- Research projects and prototypes were developed using lab equipment, demonstrating practical application and innovation.
- Community outreach programs and student engagement activities were carried out as intended.

Conclusion

Based on the detailed expenditure and activity reports, it is confirmed that there has been no deviation from the purpose for which the grant was released. The funds have been utilized effectively and efficiently to achieve the objectives outlined in the grant agreement, ensuring that the AICTE IDEA Lab operates as a hub for innovation, education, and research.

Summary:

- *No Deviation*: All grant funds were used strictly for their intended purpose.
- *Effective Utilization*: The activities and expenditures align with the objectives of fostering innovation, enhancing learning experiences, and promoting research and development.
- *Compliance*: The AICTE IDEA Lab has complied with the grant agreement, ensuring transparent and accountable use of funds.

11. Has this Program Augmented the Facilities of your Institute/ Department.

The AICTE IDEA Lab program has significantly enhanced the facilities of our institute and department by introducing cutting-edge technological resources and fostering an environment of innovation. The lab is equipped with advanced tools such as 3D printers, robotics kits, and IoT devices, which have greatly improved hands-on learning and the practical application of theoretical concepts across all engineering disciplines. Additionally, it has facilitated interdisciplinary research and collaboration, enabling students and faculty to embark on pioneering projects. This initiative has not only elevated the quality of education but also established our institute as a leading hub for innovation and excellence in engineering and technology.

12. Academic Application of the Equipment Procured, if any

The equipment procured through the AICTE IDEA Lab program has been extensively utilized to enhance academic applications across various engineering disciplines. Key academic applications include:

- Hands-on Learning and Practical Training:
  - 3D Printers: Used in courses like Mechanical Engineering and Product Design to teach students about rapid prototyping, product development, and additive manufacturing techniques.
  - Robotics Kits: Integrated into Electrical and Electronics Engineering curriculum to provide practical experience in automation, control systems, and robotics programming.
  - IoT Devices: Employed in Computer Science and Information Technology courses to facilitate the understanding of smart systems, networked devices, and real-time data processing.
- Project-Based Learning:
  - Students undertake projects that require them to apply theoretical knowledge in real-world scenarios, promoting critical thinking and problem-solving skills.
  - Interdisciplinary projects that combine elements of mechanical, electrical, and software engineering, fostering collaborative learning.
- Research and Development:
  - Faculty and students use the lab equipment to conduct innovative research in areas such as sustainable technologies, advanced manufacturing, and intelligent systems.
  - Development of new methodologies and technologies, contributing to academic publications and conference presentations.
- Curriculum Integration:
  - The equipment supports the integration of practical components into the existing curriculum, ensuring that students gain hands-on experience alongside theoretical learning.
  - Specialized courses and workshops are designed around the lab equipment to provide in-depth knowledge and skills in emerging technologies.
- Capstone Projects:
  - Senior students utilize the lab facilities to develop and complete their final year capstone projects, which often involve designing, building, and testing prototypes or systems.
- Skill Development Programs:
  - The lab hosts various training sessions and certification programs aimed at upskilling students and faculty in advanced technologies and tools.

The AICTE IDEA Lab has thus become an integral part of our academic framework, enriching the educational experience and equipping students with the skills needed for the modern engineering landscape.

13. Whether the equipment have been added on the I-STEM portal? If yes, how many?

A total of 62 pieces of equipment have been added to the I-STEM portal. These include a variety of tools and resources procured through the AICTE IDEA Lab program, such as 3D printers, robotics kits, IoT devices, and other advanced manufacturing equipment. This addition facilitates collaboration and access to cutting-edge research tools for academic and research institutions across India, promoting innovation and resource-sharing in the fields of science, technology, and engineering.

9/12/24

Project Coordinator

(Signature and Seal with date)

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9/12/24

HoI/Registrar/Director/Principal

(Signature and Seal with date)

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