

e-yantra Lab Events Report

Session 2024-25



**Embedded Systems and Robotics Lab
(in collaboration with IIT Bombay)**



**Swami Keshvanand Institute of Technology,
Management and Gramothan, Jaipur**

Regular activities conducted under e-yantra in **Session 2024-25**

Following activities have been conducted:

S. No.	Date	Name of Event
1	8 April, 2025	Introduction to 3D Printing (e yantra lab)
2	25 April, 2025	Technical Session on “Introduction to Microcontrollers”

Technical Event Report: Introduction to 3D Printing

The e-Yantra Lab at Swami Keshvanand Institute of Technology (SKIT), Jaipur, organized an insightful technical session on "Introduction to 3D Printing" on 8/4/2025 for first year mechanical engineering students, conducted by Mr. Praveen Saraswat, Associate Professor in the Department of Mechanical Engineering, along with Mr. Dinesh Lal Gupta, Senior Technical Assistant. The session aimed to familiarize students with the fundamentals of 3D printing, its significance in modern manufacturing, and its diverse applications across industries. The workshop began with an introduction to additive manufacturing, where students learned how 3D printing differs from traditional subtractive manufacturing techniques. Mr. Saraswat elaborated on the importance of 3D printing in rapid prototyping, customized production, and complex geometrical fabrication, highlighting its applications in aerospace, healthcare (prosthetics and bio-printing), automotive, and consumer goods. The session also covered the evolution of 3D printing technology, emphasizing its role in Industry 4.0 and sustainable manufacturing by reducing material wastage. Students were introduced to various 3D printing techniques such as Fused Deposition Modeling (FDM), Stereolithography (SLA), and Selective Laser Sintering (SLS), with a focus on their comparative advantages.





The second part of the session delved into the step-by-step process from design to final product, where Mr. Dinesh Lal Gupta demonstrated how CAD (Computer-Aided Design) software like AutoCAD, SolidWorks, and TinkerCAD is used to create 3D models. He explained the necessity of converting these designs into STL (Stereolithography) files and how slicing software like Cura and Simplify3D breaks the model into printable layers by generating G-code. A hands-on demonstration of an FDM (Fused Deposition Modeling) printer was conducted, where students observed the printer's mechanical components, including the extruder, heated bed, and stepper motors. The working principle of FDM was explained in detail, covering filament feeding, layer-by-layer deposition, and temperature control mechanisms. Students also learned about different printing materials such as PLA, ABS, and PETG, along with troubleshooting common printing issues like warping and nozzle clogging. The session concluded with an interactive Q&A, where students discussed career opportunities in additive manufacturing and the future scope of 3D printing in smart factories. Overall, the workshop provided a comprehensive understanding of 3D printing technology, equipping students with both theoretical knowledge and practical insights into this transformative manufacturing process.

Session on Introduction to 3D Printing organized by e yantra lab SKIT

Attendance Sheet

Session on Introduction to 3D Printing organized by e yantra lab SKIT

Attendance Sheet

S. No.	Roll No.	Name of Student	Attendance
1	24ESKME001	A Roshini	P
2	24ESKME002	Akshat Sharma	P
3	24ESKME003	Amit	(A)
4	24ESKME004	Amit Kumar	P
5	24ESKME005	Ankit Jangid	P
6	24ESKME006	Ankit Khatkar	P
7	24ESKME007	Anshuman Pareek	P
8	24ESKME008	Ashish Kumar	(A)
9	24ESKME009	Bitthal Nama	P
10	24ESKME010	Daksh Agrawal	P
11	24ESKME011	Dipanshu Jain	(A)
12	24ESKME012	Divyansh	P
13	24ESKME013	Divyarth Raj	P
14	24ESKME014	Gourav Kumar	(A)
15	24ESKME015	Gyanender Pratap Rathore	(A)
16	24ESKME016	Harshit Prajapati	(A)
17	24ESKME017	Harshit Singh	(A)
18	24ESKME018	HEMLATA CHANCHLANI	P
19	24ESKME019	Himanshu Choudhary	(A)
20	24ESKME020	Karan Dev Singh	P
21	24ESKME021	Krishna Chaturvedi	(A)
22	24ESKME022	Lakshya Duddy	P
23	24ESKME023	Mahendra Kumar Jangid	P
24	24ESKME024	NARENDRA CHOUDHARY	P
25	24ESKME025	Narendra Kumar	P
26	24ESKME026	Niharika Sharma	P
27	24ESKME027	Nishant Sharma	(A)
28	24ESKME028	Pankhuri Deonia	P
29	24ESKME029	Rahul	P
30	24ESKME030	Rishubh Jangid	P
31	24ESKME031	Rohit Singh	P
32	24ESKME032	Sameer Hussain	P
33	24ESKME033	Satvik Tyagi	(A)
34	24ESKME034	Satyam Gaur	P
35	24ESKME035	Saumya Thathera	P
36	24ESKME036	Shagun Singh	(A)
37	24ESKME037	Shashwat Srivastava	P
38	24ESKME038	Somya Sharma	P
39	24ESKME039	Sourabh Sharma	P
40	24ESKME040	Sumit Sharma	P
41	24ESKME041	Tanmay Singh	P
42	24ESKME042	Udit Sharma	P
43	24ESKME043	Utkarsh Chaudhary	P
44	24ESKME044	Vatsala Sharma	(A)
45	24ESKME045	Vinay Kumar	P

Total Present - 32

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(Pravem Sarawat)

Technical Session on Introduction to Microcontrollers

Event Report

The Introduction to Microcontrollers session, organized by the e-Yantra Lab at SKIT, was an insightful and hands-on workshop on 25 April, 2025 conducted by Dr. Pallav Rawal, Associate Professor in the Department of Electronics and Communication Engineering for first year students. The event aimed to familiarize students with the fundamental concepts of microcontrollers, their significance in modern electronics, and their diverse applications across industries. Dr. Rawal began by explaining the basic definition of a microcontroller, describing it as a compact integrated circuit designed to perform specific tasks in embedded systems. He highlighted the differences between microcontrollers and microprocessors, emphasizing that microcontrollers integrate memory, processors, and peripherals into a single chip, making them ideal for automation and control applications. The session then delved into the importance of microcontrollers in various fields, including robotics, automotive systems, home automation, medical devices, and industrial machinery. Dr. Rawal elaborated on how microcontrollers serve as the brain of embedded systems, enabling precise control, real-time processing, and energy efficiency.





A major highlight of the session was the demonstration of the Firebird V 2560 robot, which utilizes the ATmega 2560 microcontroller. Dr. Rawal provided a detailed overview of the microcontroller's architecture, explaining its 8-bit AVR RISC-based design, 256KB flash memory, and 8KB SRAM, making it suitable for complex robotic applications. He discussed the pin configuration of the ATmega 2560, covering digital I/O pins, analog inputs, PWM outputs, and communication interfaces such as UART, SPI, and I2C. Students were given a hands-on demonstration of how to interface sensors and actuators with the microcontroller, followed by a live coding session where basic programs were executed to control the robot's movements. Dr. Rawal also explained the importance of embedded C programming and introduced the students to the Arduino IDE, which simplifies coding for AVR microcontrollers. The session concluded with a Q&A round, where students discussed real-world challenges in microcontroller-based projects and explored career opportunities in embedded systems. Overall, the workshop provided a strong foundation in microcontroller concepts and inspired students to explore further applications in robotics and automation.

The event successfully bridged the gap between theoretical knowledge and practical implementation, allowing students to interact directly with hardware and software components. Dr. Rawal's engaging teaching style, combined with live demonstrations, ensured that participants gained a thorough understanding of microcontroller programming, interfacing techniques, and embedded system design. The session not only enhanced technical skills but also encouraged innovation and problem-solving in the field of electronics. The e-Yantra Lab's initiative in organizing such workshops plays a crucial role in fostering hands-on learning and preparing students for industry-relevant challenges in embedded systems and robotics.

**Technical Session on “Introduction to Microcontrollers” organized by e yantra
lab SKIT
Attendance Sheet**

Technical Session on “Introduction to Microcontrollers” organized by e yantra lab SKIT Attendance Sheet			
S. No.	Roll No.	Name	Attendance
1	24ESKEC001	Aaliya Parveen	P
2	24ESKEC002	Abhijeet Yadav	P
3	24ESKEC003	Abhishek Prajapat	P
4	24ESKEC005	Aditya Sankhla	P
5	24ESKEC006	Aditya Sharma	A
6	24ESKEC007	Anik Atri	P
7	24ESKEC008	Ankit Kumar Yadav	P
8	24ESKEC009	Ankit Sharma	P
9	24ESKEC010	Anshul Garg	P
10	24ESKEC012	Ashish Gurjar	P
11	24ESKEC014	Ayush Saran	P
12	24ESKEC015	Darsh Jain	A
13	24ESKEC016	Darshit Jain	P
14	24ESKEC017	Devang Chandolia	A
15	24ESKEC018	Devanshi Jain	P
16	24ESKEC019	Devesh Sharma	P
17	24ESKEC020	Dhruv Yadav	P
18	24ESKEC021	Dikshant Paliwal	P
19	24ESKEC022	Dishant Gurjar	P
20	24ESKEC023	Diya Arora	P
21	24ESKEC024	Diya Rongali	A
22	24ESKEC025	Fateh Singh Yadav	P
23	24ESKEC027	Govind Sharma	P
24	24ESKEC028	Govinda Soni	P
25	24ESKEC029	Hardika Chopra	A
26	24ESKEC030	Harshita Saini	P
27	24ESKEC031	Heman Choudhary	P
28	24ESKEC032	Hemant	P
29	24ESKEC033	Hitarth Sharma	P
30	24ESKEC034	Jatin Choudhary	A
31	24ESKEC035	Jayesh Kumar Dubey	A
32	24ESKEC036	Kanak Sharma	P
33	24ESKEC037	Karan Kumar	P
34	24ESKEC038	Keshav Saini	P
35	24ESKEC040	Khushi Jangir	P
36	24ESKEC041	Khwahish Rogha	P
37	24ESKEC042	Komal	A
38	24ESKEC043	Lakshit Rawat	P
39	24ESKEC044	Lakshya Choudhary	P
40	24ESKEC045	Lividha Choudhary	P
41	24ESKEC046	Manas Purohit	A
42	24ESKEC047	Meenesh Kumar Sain	A
43	24ESKEC048	Mohit Jurel	P
44	24ESKEC049	Mohit Kumar Kalwaniya	P

34 Present
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