SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)

DEPARTMENT OF MECHATRONICS ENGINEERING

SHAPEMAKERS CLUB

ANNUAL REPORT

AcademicYear : 2023-2024

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Preface

The Shapemakers Club of the Department of Mechatronics Engineering, Sri Manakula Vinayagar Engineering College, serves as an innovative and creative platform dedicated to nurturing technical expertise, design thinking, and hands-on learning in the field of 3D printing and additive manufacturing. The club is established with the objective of bridging the gap between conceptual design and practical implementation by enabling students to transform ideas into functional prototypes through advanced digital fabrication technologies. It actively encourages members to explore emerging trends in 3D modeling, rapid prototyping, product development, and smart manufacturing through workshops, technical training programs, expert lectures, project-based learning, design competitions, and interdisciplinary collaborations. By fostering creativity, innovation, problem-solving skills, and teamwork, the club aims to equip students with industry-relevant competencies and entrepreneurial mindsets required in modern manufacturing and product design sectors. The smooth functioning of the club is ensured by a dedicated team of office bearers, including the President, Vice President, Treasurer, Technical Head, and Design Lead, who work collectively with enthusiastic members to plan, organize, and execute various technical and co-curricular activities throughout the academic year. Through continuous learning, innovation-driven initiatives, and industry-oriented exposure, the Shapemakers Club strives to develop technically proficient, socially responsible, and professionally competent engineers while contributing to the academic excellence and technological advancement of the institution.

Faculty Coordinator
Mr. S. Prakash

HoD/ MCTR
Dr. G.B.M. Mohan Raj

IQAC Coordinator
Dr. Arivalagar A A

Director Cum Principal
Dr.V.S.K. Venkatachalapathy

ABOUT THE INSTITUTION

Sri Manakula Vinayaga Educational Trust was founded to provide quality and affordable education to the weaker sections of society. The trust established Sri Manakula Vinayagar Engineering College (SMVEC) in 1999. SMVEC is an autonomous institution affiliated to Pondicherry University. It offers 13 undergraduate, 8 postgraduate and 11 Research programs in engineering. SMVEC has been accredited by NAAC with "A" grade and NBA. The institution is also accredited by TATA consultancy services. The college has a good placement record with students getting job offers from top companies in India and abroad. SMVEC students have won many awards and accolades for their academic achievements. To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

VISION

- To nurture the cornerstone of excellence in engineering education and drive innovation by seamlessly integrating the fundamentals of Science and Humanities

MISSION

M1: Quality Education : To provide comprehensive academic system that amalgamates the cutting edge technologies with best practices.
M2: Research and Innovation : To foster value-based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.
M3: Employability and Entrepreneurship : To inculcate the employability and entrepreneurial skills through value and skill based training.
M4: Ethical Values : To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

ABOUT THE DEPARTMENT

The Bachelor of Technology in Mechatronics Engineering (MCTR) programme prepares students for a rapidly changing technological landscape. This programme focuses on both internet networking and broadband communication, offering a thorough grasp of data transport across wired and wireless channels. Our curriculum prepares graduates to excel and innovate in global data networks, enabling safe communication and information exchange via text, phone, or video.

VISION

- To be a department with outstanding competencies in education and research in interdisciplinary field of Mechatronics Engineering for the prosperity of students and society.

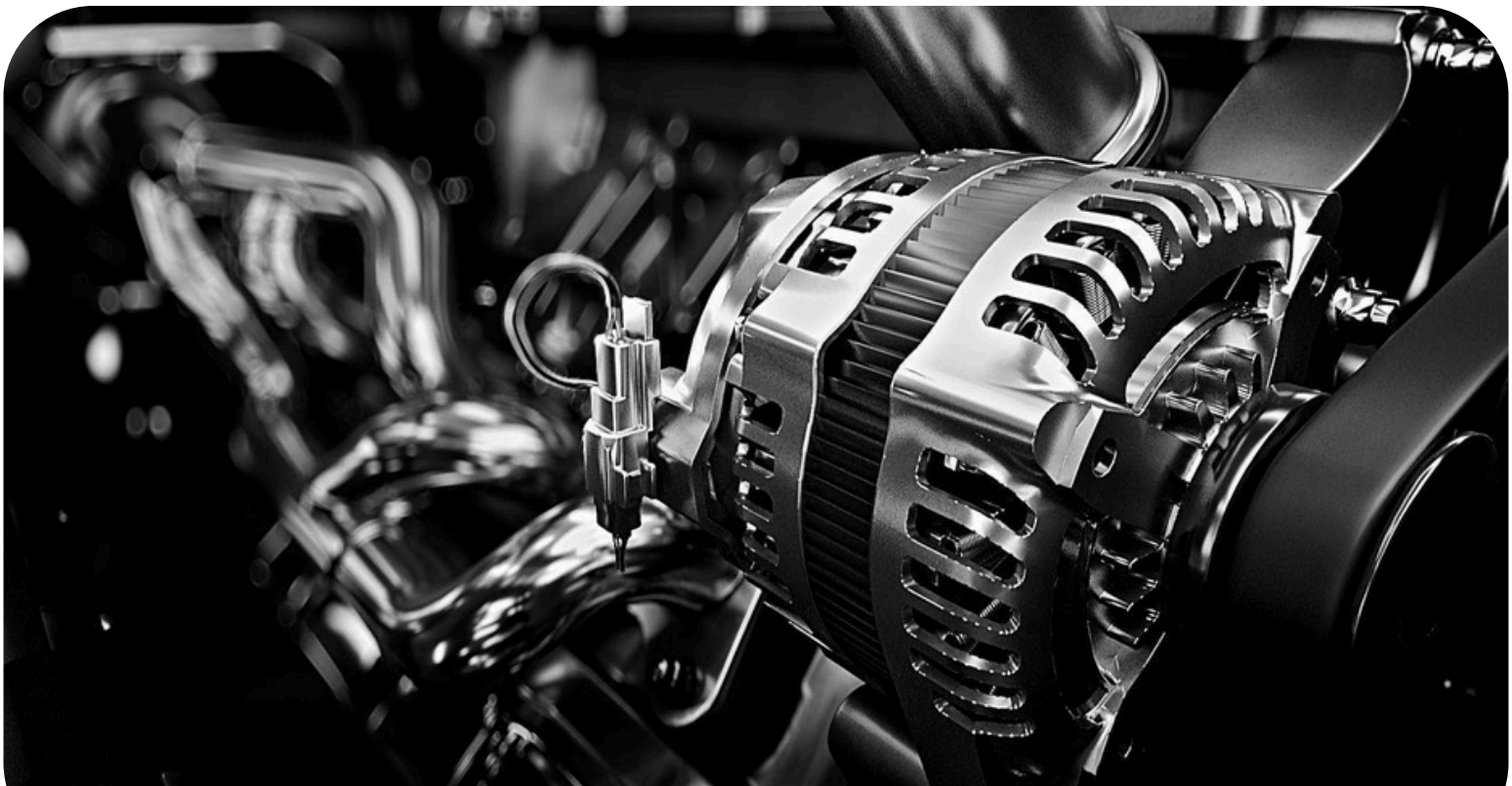
MISSION

M1 - Quality Integration: To uphold excellence in education by integrating the teaching learning process with handson trainings in updated technologies.

M2 - Research Exploration: To maintain a dynamic balance between learning and research by encompassing activities related to Research, Industrial projects and Innovation Contests.

M3 – Personality Development: To enrich the team spirit and entrepreneurship skills through training programmes on personality development for career prospects.

M4 – Social Ethics: To enhance the principle of highest ethical values by inculcating code of conduct for the betterment of the Society.



ABOUT ELDRIDA INNOVATORS CLUB

The Shapemakers Club is a student-driven 3D printing and digital fabrication community dedicated to transforming ideas into tangible creations. The club focuses on additive manufacturing technologies, 3D modeling, prototyping, and product design, providing members with hands-on experience in turning concepts into real-world objects.

Shapemakers Club organizes workshops, seminars, design challenges, competitions, and practical training sessions centered on 3D printing and emerging fabrication technologies. The club helps students prepare for future careers in engineering, product design, architecture, robotics, and other technology-driven fields by building strong technical foundations and problem-solving skills.

VISION

- To become a center of excellence in 3D printing and digital fabrication within the institution.
- To empower students to transform innovative ideas into functional prototypes and real-world solutions.
- To cultivate a culture of creativity, design thinking, and technological innovation.
- To inspire students to pursue careers and entrepreneurship in additive manufacturing and emerging technologies.

MISSION

- To promote and enhance practical skills in 3D modeling, additive manufacturing, and prototyping.
- To provide hands-on training and real-world exposure to 3D printing technologies.
- To create opportunities for students to showcase their designs, innovations, and technical expertise.
- To organize workshops, competitions, and collaborative projects that foster creativity and problem-solving.
- To encourage research, experimentation, and entrepreneurial thinking in product development.
- To develop leadership, teamwork, and communication skills among members.
- To build a collaborative community that supports innovation, technical excellence, and personal growth.

ABOUT SHAPEMAKERS CLUB

The Shapemakers Club is guided by a dedicated team of office bearers who play a crucial role in shaping the club's vision and advancing its focus on 3D printing and digital fabrication. The leadership team consists of a Head of the Club, President, Vice President, Secretary, Treasurer, Design Lead, Technical Lead, and Project Coordinators, each contributing specialized skills and responsibilities to ensure the smooth functioning of the club. They plan and organize workshops, hands-on training sessions, prototyping challenges, design competitions, and technical exhibitions centered on 3D modeling and additive manufacturing. The team manages fabrication resources, oversees 3D printer operations and maintenance, mentors members in CAD design and product development, and coordinates innovative projects from concept to prototype. Through their collective leadership and collaboration, they foster a culture of creativity, precision, experimentation, and problem-solving, ensuring that the Shapemakers Club remains a dynamic platform for skill development, innovation, and future-ready makers.

Mrs.S.Jagan
Assistant Professor
Faculty Coordinator

R.Mohammed Fadil
Head of the Club
IV/A

Daniel.S
President IV/A

Shanmugadasan.R
Vice President IV/A

LIST OF EVENTS

S.No.	Title
01	3D Printer Assembly, Calibration, and Troubleshooting
02	Slicing Software, Printer Control, and Workflow Management

3D PRINTER ASSEMBLY, CALIBRATION, AND TROUBLESHOOTING

This topic provides students with practical knowledge of building and understanding the physical structure of a 3D printer. Learners explore printer components such as frames, motors, belts, extruders, and control electronics, followed by hands-on calibration of axes, bed leveling, and nozzle alignment. The topic also emphasizes identifying common mechanical and electrical issues, enabling students to troubleshoot problems effectively and ensure reliable printer performance.

- Date of the Event: 10.02.2023
- Year Of Student: I, II, III & IV
- Venue: STM Lab, Mctr dep.
- Number of Participants: 57
- Mode Of Event: Offline
- Event Incharge: Ms.S.Jagan

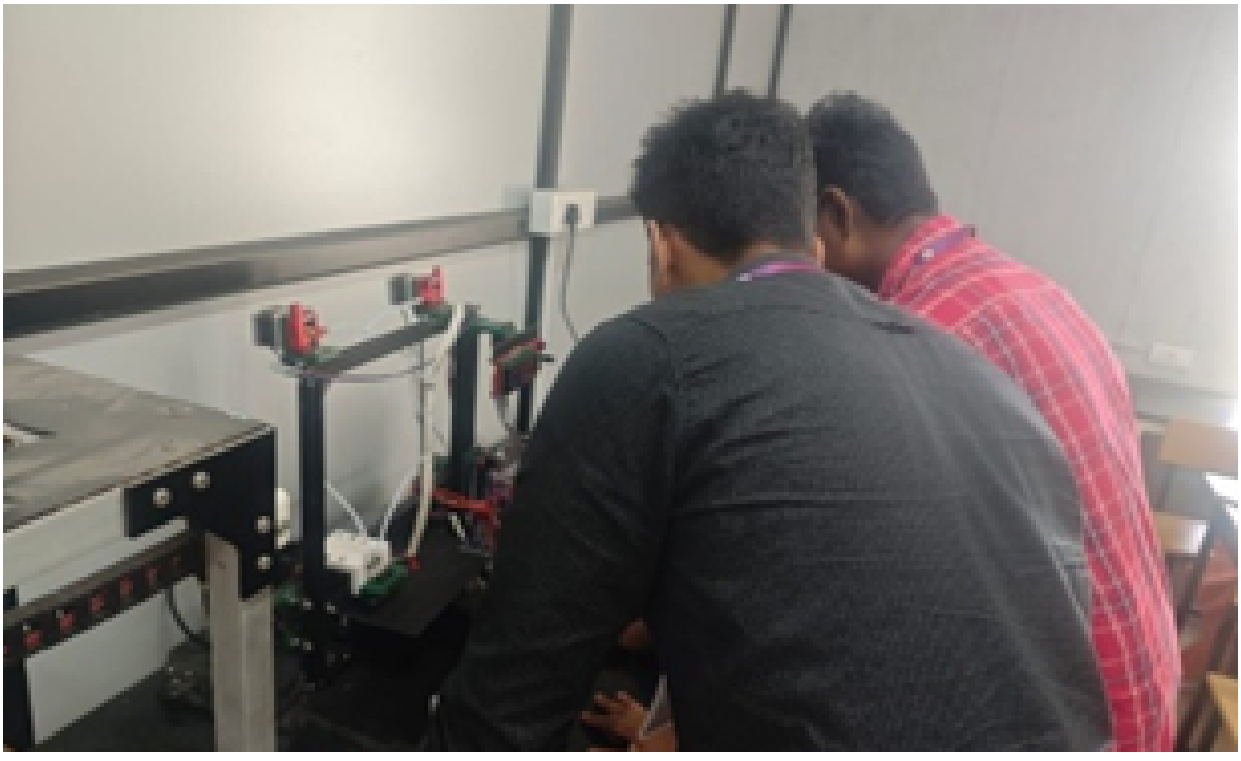
OBJECTIVES OF ACTIVITY

- To provide practical exposure to the assembly and configuration of 3D printer hardware.
- To enhance understanding of mechanical, electrical, and electronic components of a 3D printer.
- To train students in performing calibration procedures such as bed leveling and axis alignment.
- To develop troubleshooting skills for identifying and resolving common 3D printing errors.
- To promote safe handling, maintenance practices, and responsible usage of 3D printing equipment.

OUTCOMES OF THE ACTIVITY

- Students identified and explained the functions of key 3D printer components.
- Participants successfully assembled and configured basic 3D printer hardware.
- Students performed essential calibration procedures to ensure accurate printing.
- Participants diagnosed and resolved common mechanical and electrical faults.
- Students improved their analytical thinking and hands-on technical skills in additive manufacturing.
- Members developed confidence in maintaining and optimizing 3D printer performance.

PHOTO GALLERY



SLICING SOFTWARE, PRINTER CONTROL, AND WORKFLOW MANAGEMENT

This topic focuses on the digital workflow involved in 3D printing, from preparing models to executing successful prints. Students learn to use slicing software to convert 3D models into machine-readable instructions while configuring essential parameters such as layer height, speed, and temperature. Additionally, the topic covers printer control through software interfaces, monitoring print progress, and managing the complete printing workflow, helping learners achieve consistent and high-quality results.

- Date of the Event: 28.03.2023
- Year Of Student:I,II,III & IV
- Venue: MCTR II nd year Classroom
- Number of Participants: 65
- Mode Of Event:Offline
- Event Incharge: Mr. S. Jagan

OBJECTIVES OF ACTIVITY

- To provide students with a clear understanding of the complete digital workflow involved in 3D printing, from model preparation to final output.
- To train students in using slicing software to convert 3D models into machine-readable G-code files.
- To enhance knowledge of essential printing parameters such as layer height, print speed, infill density, and temperature settings.
- To develop practical skills in printer control, job execution, and real-time monitoring through software interfaces.

OUTCOMES OF THE ACTIVITY

- Students gained hands-on experience in using slicing software for preparing and optimizing 3D print files.
- Participants developed the ability to configure and fine-tune printing parameters for improved print quality and efficiency.
- Learners understood the integration between slicing software and 3D printers for smooth job execution and monitoring.
- Students acquired practical knowledge of troubleshooting common printing errors and improving output quality.

PHOTO GALLERY