



SITAMS

SREENIVASA INSTITUTE OF TECHNOLOGY AND
MANAGEMENT STUDIES
[AUTONOMOUS], CHITTOOR

(Affiliated to JNTUA, Ananthapuramu | Approved by AICTE, New Delhi)



INSTITUTION'S
INNOVATION
COUNCIL

DEPARTMENT OF MECHANICAL ENGINEERING



ONE DAY WEBINAR

Design and Development of New Components for the Robotic Assisted Surgery (RAS)

Advanced Components | Innovative Design |
Better Surgical Outcomes



GUEST SPEAKER



Arish D

Senior Design Engineer

Medtronic
USA



Date

5th OCTOBER
2026
(MONDAY)



Time

04:00 PM - 05:00 PM
(IST)



Mode

Online
(Google Meet)

DIGNITARIES

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SITAMS, Chittoor

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SITAMS, Chittoor

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SITAMS, Chittoor



*Innovation
for a Better
Tomorrow*



**SREENIVASA INSTITUTE OF TECHNOLOGY
AND MANAGEMENT STUDIES
(SITAMS)
(AUTONOMOUS)**

Department of Mechanical Engineering
(Mechanical Engineering Department Association- MEDA)



A Webinar on

“Design and Development of New Components for Robotic Assisted Surgery”

Introduction:

On 5th October 2026, a Webinar on “**Design and Development of New Components for Robotic Assisted Surgery**” was organized by Department of Mechanical Engineering, SITAMS. Mr. Arish D, Sr. Design Engineer, Medtronics, USA, acted as a resource person for this event.

Speaker Details	: Mr. Arish D, Sr. Design Engineer, Medtronics, USA
Covenor	: Dr.N.Sathish Kumar, HOD, Dept.of Mech.Engg. SITAMS.
Coordinator	: Mr.V.Hema Prasad, Assistant Professor, Dept.of Mech.Engg. SITAMS.
Co-Coordinator	: Mr. A.S.Praveen, Assistant Professor, Dept.of Mech.Engg. SITAMS.
Date	: 05-10-2026
Venue	: Mechanical Seminar Hall-I
Target Audience	: All the 2 nd , 3 rd and 4 th Year Mechanical Engineering Students.

Key Highlights of the Session:

During his address, Mr. Arish D emphasized the importance of **Design and Development of New Components for Robotic Assisted Surgery** in industries. He provided a comprehensive roadmap for students, covering:

Introduction

Robotic-assisted surgery is an advanced medical technology that combines robotics, mechanical engineering, electronics, sensors, and computer control to support surgeons in performing complex surgical procedures with high precision and accuracy. These systems help surgeons perform minimally invasive operations through small incisions, reducing tissue damage, blood loss, and recovery time. The design and development of new components for robotic-assisted surgery is an important research area focused on improving surgical performance, patient safety, and operational efficiency.

Design and Development of Components

The development of robotic surgical components involves the design of robotic arms, joints, end-effectors, surgical instruments, actuators, sensors, and control mechanisms. Mechanical design principles are used to develop compact, lightweight, rigid, and flexible components capable of performing precise movements within limited surgical spaces. Computer-Aided Design (CAD) and Computer-Aided Engineering (CAE) tools help engineers create three-dimensional models, analyze structural strength, evaluate stresses, and optimize component performance before manufacturing.

Specialized end-effectors, such as surgical grippers, forceps, cutters, and suturing instruments, are designed to provide improved dexterity and controlled tissue manipulation. Advanced materials, including medical-grade stainless steel, titanium alloys, and suitable biocompatible polymers, are selected based on strength, corrosion resistance, sterilization requirements, and compatibility with the human body.

Integration of Advanced Technologies

Modern robotic-assisted surgical systems incorporate sensors, actuators, machine vision, and intelligent control systems. Force and position sensors help monitor instrument movement and the forces applied to tissues. Haptic feedback technology can provide surgeons with tactile information during surgical procedures. In addition, artificial intelligence and computer vision can support instrument tracking, image analysis, and surgical navigation. These technologies contribute to improved precision, reduced human error, and enhanced coordination between the surgeon and the robotic system.

Applications and Benefits

New robotic surgical components have applications in laparoscopic, orthopedic, cardiac, neurological, and microsurgical procedures. Their development aims to improve instrument maneuverability, accessibility to complex anatomical regions, and the accuracy of delicate surgical operations. Modular component design also allows easier maintenance, replacement, and future upgrades. Furthermore, appropriate testing and validation are essential to ensure mechanical reliability, electrical safety, biocompatibility, sterilization compatibility, and compliance with applicable medical-device standards.

Conclusion

The design and development of new components for robotic-assisted surgery represents a significant interdisciplinary advancement in mechanical engineering and medical technology. By combining innovative mechanical designs with advanced materials, precision manufacturing, sensor integration, and intelligent control, engineers can develop safer and more efficient surgical systems. Continued research in this field has the potential to enhance surgical precision, reduce patient trauma, improve recovery outcomes, and support the future development of next-generation medical robotic systems.







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MANAGEMENT STUDIES-CHITTOOR**

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ATTENDANCE SHEET

One Day Seminar

Topic: Design and Development of New Components for Robotic Assisted Surgery

Branch : Mechanical Engineering

Date : 05.10.2026

S. No	Registered Number	Name of the Student	Signature
1	24751A0301	A.CHAITHANYA	A. Chaithanya
2	24751A0302	K.JEREMIAH	K. Jeremiah
3	24751A0303	K.CHARAN	K. Charan
4	24751A0304	M.KIRAN KUMAR	M. kiran kumar
5	24751A0305	M.PRABHAS	M. Prabhas
6	24751A0306	P.L.YOGRSWAR	P. L. Yogeswar
7	24751A0307	P.MADHAN	P. madhan
8	24751A0308	R.FRANKLIN	R. Franklin
9	24751A0309	S.MUSKHAN DAWOOD	Mushtan Dawood
10	25755A0303	K.VIJAYENDRA BABU	K. Vijayendra Babu
11	23751A0302	G THULASI RAM	G. Thulasi Ram
12	23751A0303	MURALI HARSHA VARDHAN	Murali Harsha Vardhan
13	23751A0304	S JAFAR	S. Jafar
14	23751A0305	SHAIK MUBARAK	S. mubarak
15	23751A0306	V TEJOMURTHY	V. Tejomurthy
16	25751A0301	CHANDRA SEKHAR SIDHARTHA	C. Sidhartha
17	25751A0303	ITEPALLI PARTHA SARADHI	I. Parthasarathi
18	25751A0304	M C SRAVANI	M. C. Sravani
19	25751A0305	M MOHAN	M. Mohan
20	25751A0306	MADHUSUDHAN THEJA	M. Theja
21	25751A0307	MUDI MOHESH	M. mohesh
22	25751A0308	P YESWANTHI	P. yeswanti
23	25751A0309	THAGEERU JYOTHEESWAR	T. Jyotheeswar

సాక్షి

ఆంధ్రప్రదేశ్, మహారాష్ట్ర, కర్ణాటక, తెలంగాణ ప్రభుత్వాల ఆధ్వర్యంలో

భారత ప్రభుత్వం ఆధ్వర్యంలో

రోబోటిక్ అసిస్టెడ్ సర్జరీపై అంతర్జాతీయ వెబినార్

చిత్తూరు కలెక్టరేట్: నగర సరిహద్దులోని సీతమ్మ ఇంజనీరింగ్ కళాశాలలో బుధవారం మెకానికల్ ఇంజనీరింగ్ విభాగం ఆధ్వర్యంలో 'డిజైన్ అండ్ డెవలప్ మెంట్ ఆఫ్ న్యూ కంపోనెంట్స్ ఆఫ్ రోబోటిక్ అసిస్టెడ్ సర్జరీ' అనే అధునాతన సాంకేతిక అంశంపై అంతర్జాతీయ వెబినార్ నిర్వహించారు. ఈ వెబినార్ లో జిల్లా వాసి, అమెరికాలోని ప్రముఖ హెల్త్ కేర్ టెక్నాలజీ సంస్థ 'మెడ్ ట్రానిక్' సీనియర్ డిజైన్ ఇంజనీర్ ఆరిస్ మాట్లాడారు. వైద్యరంగంలో రోబోటిక్ ఆధారిత శస్త్రచికిత్సలకు అవసరమైన కొత్త విడిభాగాల రూపకల్పన, వాటి ఉత్పత్తి సాంకేతికతను, ఆధునిక పారిశ్రామిక ఉత్పత్తుల్లో నాణ్యత పర్యవేక్షణకు ప్రాధాన్యత ఎంత ఉందో ఉదాహరణలతో సహా ఆయన విద్యార్థులకు వివరించారని కళాశాల సీఈ నాగేంద్ర ప్రసాద్ తెలిపారు. అంతేకాకుండా రోబోటిక్ సర్జరీ రంగంలో సరికొత్త ఆవిష్కరణలపై మెకానికల్ ఇంజనీరింగ్ విద్యార్థులు, అధ్యాపకుల సందేహాలను ఆయన నివృత్తి చేశారని చెప్పారు. మారుతున్న పారిశ్రామిక అవసరాలకు



వెబినార్ కు హాజరైన సీతమ్మ మెకానికల్

విద్యార్థులు

అనుగుణంగా ఇలాంటి వినూత్న సాంకేతిక కార్యక్రమాలు విద్యార్థుల నైపుణ్యాలు మెరుగుకు, ప్రపంచ స్థాయిలో బహుళజాతి కంపెనీల్లో ఉద్యోగ అవకాశాలు పొందడానికి దోహదం చేస్తుందని పేర్కొన్నారు. వెబినార్ లో చైర్మన్ రంగనాథం, విద్యా సలహాదారు నారాయణ, ఇన్ చార్జ్ ప్రిన్సిపాల్ పళని వేలు, మెకానికల్ విభాగం అధ్యాపకులు హేమప్రసాద్, ప్రవీణ్, విభాగాధిపతి సతీష్ కుమార్, మెకానికల్ విద్యార్థులు పాల్గొన్నారు.



SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

Murukambattu, Chittoor – 517 127, Andhra Pradesh (Autonomous)

(Department of EEE, MCA – NBA Accredited)

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CERTIFICATE OF PARTICIPATION

This is to certify that

Mr. K. Jeremiah

of *Sreenivasa Institute of Technology and Management Studies*
has successfully participated in the seminar on

Design and Development of New Components for Robotic Assisted Surgery

held on 04 August 2026, organized by the **Department of Mechanical Engineering,**
Sreenivasa Institute of Technology and Management Studies (SITAMS),
Chittoor, Andhra Pradesh.

Mr. V. Hema Prasad
Coordinator



Dr. N. Satish Kumar
Convener

Dr. N. Satish Kumar

HOD/MECH