



SRI RAMAKRISHNA ENGINEERING COLLEGE

[Educational Service : SNR Sons Charitable Trust]

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MINUTES OF THE ELEVENTH BOARD OF STUDIES (BoS) MEETING FOR THE UG ROBOTICS AND AUTOMATION PROGRAMME AND PG ROBOTICS AND ARTIFICIAL INTELLIGENCE PROGRAMME HELD ONLINE IN GOOGLE MEET ON 14.03.2026 FROM 11.00 AM to 1.00 PM.

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.P.R. Thyla Professor, Department of Mechanical Engineering PSG College of Technology, Coimbatore – 641004	University Nominee
3	Dr.R.Senthilraja Head, Department of Automobile Engineering Government College of Engineering (IRTT), Erode	University Nominee
4	Dr.Santhakumar Mohan Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Subject Expert from outside the Parent University to be nominated (preferably IISc/IITs/NITs)
5	Dr Kuppan Chetty Ramanathan Professor, Mechatronics at the School of Mechanical Engineering, SASTRA Deemed University, Thanjavur - 613401	Subject Expert from the parent university (Preferably from Government/ Aided Organization)
6	Mr. J. Vasanthakumar Senior Manager – Control & Automation M/s Hirotec India Limited Coimbatore – 641035	Industry Expert
7	Mr.Richie Soshan (Batch: 2019-2023) Project Engineer, M/s Soliton Technologies Limited Coimbatore - 641014	Meritorious Alumnus
8	Dr.R.Sudhakar , Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
9	Dr.A.Kishore kumar , Associate Professor Department of Robotics and Automation / SREC	Faculty Member

10	Dr.G.Ranjitham , Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
11	Dr.P.Devendran, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
13	Mrs.N.Dheerthi, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
14	Dr.G.Hemalatha, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
15	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Mrs.S.Prashanthini, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
17	Ms.R.Deeksha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member

Prof. A. Murugarajan, Chairperson, Board of Studies, presided over the meeting and welcomed all members to the 11th BoS meeting. After a brief introduction of the committee members, he presented an overview of the agenda, department vision and mission, New 11 POs in line with New SAR (GAPC 4.0), department's highlights and achievements, including student internships, placements, and higher studies, as well as student participation and accomplishments. He further elaborated on the features of the R2025 regulation for B.E Robotics and Automation Programme, the distribution of credits and curriculum structure, and the detailed syllabus for the 5rd and 6th semesters under the R2025 Regulation. The various courses offered under Professional Electives, Open electives, Multi-Disciplinary Courses, Skill Enhancement Courses and Value-Added Courses are presented under the R2025 Regulation. He also presented the R2026 regulation for M.Tech Robotics and Artificial Intelligence , the distribution of credits and curriculum structure, and the detailed syllabus for the 1st semester under the R2026 Regulation.

Further, the agenda items were discussed, and the following resolutions were passed.

ITEM No.1: Approval of Minutes of Meeting of the previous 10th BoS

The Board of Studies resolved to approve and confirm the minutes of the 10th Board of Studies meeting held on 8th Nov 2025

ITEM No.2: Regulations 2025 and Distribution of Credits

- The Chairperson outlined the key features of the **Regulations 2025**, which had been discussed in detail during the previous **Board of Studies (BoS)** meeting. Furthermore, the **credit distribution and detailed syllabus for courses for Semesters I to IV** had already been approved in the earlier BoS meeting.
- In addition, the **proposed distribution of credits across various categories for Semesters III to VIII**, with an **average of 21 credits per semester**, was presented for the members' review and approval.
- It was resolved by the members to approve the proposed semester-wise credit distribution

Category	I Sem	II Sem	III Sem	IV Sem	V Sem	VI Sem	VII Sem	VIII Sem	Total Credits
HSSM	4	4				3	3		14
BSC	9	5	4						18
ESC	6	6	4	2					18
PCC	2	3	9	11	12	7	6		50
PEC					3	3	6	6	18
OEC				3	3				6
MMC				3	3	3			9
AEC		2	2	2					6
SEC			2		2				4
VAC				2		2			4
LAC						2			2
ELC				2		2	2	6	12
Total Credits	21	20	21	25	23	22	17	12	161

ITEM No.3: Proposed Curriculum Structure (V to VIII Semesters)

- The Chairperson presented the comprehensive curriculum structure for Semester V to VIII and list of Professional Elective Courses, Open Elective Courses, Multi-Disciplinary Courses, Skill Enhancement Courses and Value-Added Courses of the Undergraduate Programme. He highlighted the courses proposed for Semesters V to VI, emphasizing their relevance to the field of Robotics and Automation and the justification for their inclusion in the respective semesters.
- It was resolved that the members would provide their comments and suggestions after reviewing the detailed syllabus content under the respective agenda item.

SEMESTER – V						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Mechanical System Design for Automation	PCC	60	3	1	0	4
Power Electronics and Drives for Robotics	PCC	45	3	0	0	3
Microcontrollers and Embedded Design	PCC	45	3	0	0	3
Professional Elective-I	PEC	45	3	0	0	3
Open Elective-II	OEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
AI with Data Analytics	MMC	45	1	0	4	3
Laboratory & Project Courses						
Power Electronics and Drives Laboratory	PCC	30	0	0	2	1
Microcontrollers and Embedded Design Laboratory	PCC	30	0	0	2	1
AEC/LAC/SEC/VAC Courses						
Jetson Nano for Robotics / Raspberry Pi Programming for robotics / RS Logix for Industrial Automation / SLAM Navigation / Programming with C# and .Net / Java Programming Basics	SEC	30	1	0	2	2
Total			17	1	10	23

SEMESTER – VI						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Total Quality Management	HSSM	45	3	0	0	3
Mobile Robotics and ROS	PCC	30	2	0	0	2
Industrial Data Networking	MDC	45	3	0	0	3
Professional Elective-II	PEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Control Systems for Automation	PCC	45	2	0	2	3
Laboratory & Project Courses						
Mobile Robotics and ROS Laboratory	PCC	30	0	0	2	1
Data structures with C Laboratory	PCC	30	0	0	2	1
Multi-disciplinary Project	ELC	30	0	0	4	2
AEC/LAC/SEC/VAC Courses						
Digital Marketing	VAC	30	1	0	2	2
Accounting and Taxation	LAC	30	0	0	2	2
Total			14	0	14	22

SEMESTER – VII						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Technological Innovation Management and Entrepreneurship	HSSM	45	3	0	0	3
Digital Twin and Industry 5.0	PCC	45	3	0	0	3
Professional Elective-III	PEC	45	3	0	0	3
Professional Elective-IV	PEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Robotic Perception and Intelligent Systems	PCC	30	1	0	2	2
Laboratory Courses						
Smart Factory Automation Laboratory	PCC	30	0	0	2	1
Internship	ELC	30	0	0	4	2
Total			12	0	6	17

SEMESTER – VIII						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Professional Elective - V	PEC	45	3	0	0	3
Professional Elective - VI	PEC	45	3	0	0	3
Project Work	ELC	-	0	0	12	6
Total			6	0	12	12

ITEM No.4: Proposed Courses and Syllabus Content in 5th & 6th Semesters:

- The Chairperson presented the detailed syllabus content for Semesters V and VI of the Undergraduate Programme for the members' approval.
- The members reviewed the detailed syllabus content presented by the Chairperson and provided their comments and suggestions for further improvement.
- It was resolved that the suggestions provided by the members would be incorporated, and a summary of the action taken would be presented in the form of the following table.

Sem	Proposed Course Name	Suggestions and Comments
V	Mechanical System Design for Automation	→ All the members suggested syllabus content is good comprising of design for both mechanical elements and transmission components. → Dr. Kuppan Chetty recommended renaming the course Title as “Design of Automation Elements”. → Dr. Thyla recommended renaming the course Title as “Design of Machine Elements and Transmission Systems” → All the members suggested to have one or two text books only for the course.
<u>Action Taken</u> ✓ The suggestions of the members regarding the syllabus content were accepted, as the course adequately covers the design aspects of both mechanical elements and transmission components required for automation systems. ✓ The recommendations to modify the course title were discussed. The finalized course title is “Design of Automated Mechanical Systems”. ✓ Based on the collective suggestion of the committee members, the number of prescribed textbooks for the course has been limited to two standard textbooks to ensure focused learning and ease of reference for students.		

Sem	Proposed Course Name	Suggestions and Comments
V	Power Electronics and Drives for Robotics	→ Dr. Kuppan Chetty insisted to check the contents of course “Electrical Machines” and “Power Electronics” for any same content repetition. → Dr. Kuppan Chetty and Mr. Vasanthakumar suggested renaming the course as “Power Electronics and Motion Control” and the course contents should be suitable revisited.
<u>Action Taken</u> ✓ As suggested by Dr. Kuppan Chetty, the syllabus contents of the courses Electrical Machines and Power Electronics were reviewed to identify and avoid any duplication of topics. Necessary modifications were made to ensure that the course focuses on robotics-related applications without overlapping with the existing courses. ✓ Based on the recommendations of Dr. Kuppan Chetty and Mr. Vasanthakumar, the course title has been revised to “Power Electronics and Motor Drives” The course contents have also been restructured and updated to better align with motion control requirements in robotic and automation systems.		

Sem	Proposed Course Name	Suggestions and Comments
V	Microcontrollers and Embedded Design	→ The Course earlier proposed “Microcontrollers and Embedded Systems” is renamed as “Microcontrollers and Embedded Technology”, since the same course title is already used by Electronics and Communication Engineering department. → Dr. Kuppan Chetty suggested that 8050 Microcontroller is missing. It is difficult to cover the module 1 with stipulated hours. Module 1 content has to be suitably revisited or any bridge course can be offered to fill the gap. → This course can be offered as project-based lab combining the theory and lab course proposed separately.

Action Taken

- ✓ The course title “**Microcontrollers and Embedded Systems**” has been renamed as “**Microcontrollers and Embedded Design**” to avoid duplication with the course already offered by the Electronics and Communication Engineering Department. Based on the members suggestion, the finalized course title is “**Embedded Systems in Robotics**”
- ✓ Based on the suggestion of Dr. Kuppan Chetty, the syllabus was reviewed and the inclusion of the 8051 Microcontroller was considered. Module I contents were restructured to accommodate the topic within the stipulated hours, and provisions for a bridge course or introductory sessions were suggested to support students who require additional background knowledge.
- ✓ Considering the recommendation of the committee members, the possibility of offering the course as a project-based laboratory integrating both theory and practical components was discussed. The structure of the course will be reviewed to enhance hands-on learning through embedded system design projects.

Sem	Proposed Course Name	Suggestions and Comments
V	AI with Data Analytics	→ All members appreciated the theory-cum-lab format for the course. → All the Members recommended that course contents can be suitable revised to include machine learning in the artificial intelligence

Action Taken

- ✓ Based on the recommendation of the members, the course contents have been revised to incorporate key topics in machine learning to strengthen the analytical and intelligent system development aspects.
- ✓ In line with the suggestion of the committee, the course title “Artificial Intelligence and Machine Learning” will be offered as Professional Elective Course in the future to meet the emerging industry requirements.

Sem	Proposed Course Name	Suggestions and Comments
V	Power Electronics and Drives Laboratory	→ ¹ Dr. Kuppan Chetty suggested to add experiment using VFD and simple / modular positioning of servos → ¹ Mr.Vasanthakumar suggested to add experiments in position control (positioning and torque control is essential in stepper motor and servo motor)
Action Taken ✓ Additional laboratory experiments have been included on the operation of Variable Frequency Drive (VFD) and simple/modular positioning of servo motors to enhance practical understanding of motor control in automation systems. ✓ The laboratory syllabus has been revised to include experiments on position control, particularly focusing on positioning and torque control of stepper motors and servo motors, which are essential for robotic and automation applications.		

Sem	Proposed Course Name	Suggestions and Comments
VI	Total Quality Management	→ ¹ Dr. Kuppan Chetty suggested to add safety and Production Part Approval Process (PPAP) topics.
Action Taken ✓ Based on the recommendation of Dr. Kuppan Chetty, the course content has been revised to include topics on Safety Management and the Production Part Approval Process (PPAP).		

Sem	Proposed Course Name	Suggestions and Comments
VI	Mobile Robotics and ROS	→ ¹ All the members suggested the content can be suitable reduced to cover all the major topics relevant to ROS and ROS2 in prescribed 30 hours. → ¹ Dr. Santhakumar suggested renaming of the topic “Introduction to AI integration concepts in mobile robots.” in last module as “Intelligent Navigation”.
Action Taken ✓ Based on the suggestion of the committee members, the course contents have been reviewed and suitably streamlined to ensure that the major concepts related to Robot Operating System (ROS) and ROS 2 can be effectively covered within the prescribed 30 contact hours ✓ As recommended by Dr. Santhakumar, the topic “Introduction to AI Integration Concepts in Mobile Robots” in the final module has been renamed as “Intelligent Navigation” to better reflect the focus on navigation strategies and intelligent decision-making in mobile robotic systems.		

Sem	Proposed Course Name	Suggestions and Comments
VI	Industrial Data Networking	→ ¹ Mr.Vasanthakumar suggested that the topic “Profibus” is obsolete and either “ProfiNet” or “ProfiSafe” can be included. → ¹ He also suggested to include the topics such as

		EtherCAT, CC Link, Device Net, RS232 and RS485
Action Taken ✓ The topic PROFIBUS has been reviewed and replaced with more recent industrial communication protocols such as PROFINET and PROFIsafe to reflect current industrial practices. ✓ As recommended, additional topics including EtherCAT, CC-Link, DeviceNet, RS-232, and RS-485 have been incorporated into the syllabus to provide students with broader exposure to widely used industrial data communication networks in automation systems.		

Sem	Proposed Course Name	Suggestions and Comments
VI	Control Systems for Automation	→ ¹ Dr. Kuppan Chetty suggested to move the 10 th experiment proposed (Simulation of Mobile Robots) to Mobile Robotics and ROS laboratory.
Action Taken ✓ Based on the recommendation of Dr. Kuppan Chetty, the 10th experiment titled “Simulation of Mobile Robots” has been removed from the Control Systems for Automation Laboratory. ✓ The experiment has been relocated to the Mobile Robotics and ROS Laboratory, as it is more relevant to the practical learning outcomes associated with Robot Operating System (ROS) and mobile robot applications.		

Sem	Proposed Course Name	Suggestions and Comments
VI	Mobile Robotics and ROS Laboratory	→ ¹ Dr. Kuppan Chetty and Mr. Vasanthakumar suggested enquired about the experiments offered “Develop and test ROS-based multi-robot coordination and communication” can be completed in 2 hours duration by the students. They suggested to modify the lab experiments suitable to include any tool or technique or any algorithm in ROS platform.
Action Taken ✓ the experiment titled “Develop and test ROS-based multi-robot coordination and communication” was reviewed with respect to its feasibility within the 2-hour laboratory duration. It was decided to revise and simplify the experiment structure so that the tasks can be effectively completed within the allotted time. ✓ Accordingly, the laboratory experiments have been modified to incorporate specific tools, techniques, or algorithms within the Robot Operating System (ROS) platform, ensuring that the experiments are practically achievable, focused, and aligned with the learning objectives of the course.		

ITEM No.5: Proposed Verticals and Professional Elective Courses:**Proposed Verticals for Professional Elective Courses:**

Mechanical Systems and Actuation	Autonomous Systems and Mobile Robots	Control & Embedded Systems	Industrial & Smart Automation	AI & Robot Perception
1. Additive Manufacturing Technology 2. Welding Technology for Robotic Applications	1. Deep Learning for Autonomous Systems	1. Robot Dynamics and Control 2. Automotive Electronics	1. Computer-Integrated Manufacturing (CIM) 2. Digital Manufacturing 3. Industrial Internet of Things and Industry 4.0	1. Computer vision for Robotics 2. Sensor Fusion for Robotics

Proposed List of Professional Elective Courses (PEC):

Course Code/ Course Title	Department	Contact hours	L	T	P	C
Automotive Electronics	R&A only	45	3	0	0	3
Robot Dynamics and Control	R&A only	45	3	0	0	3
Welding Technology for Robotic Applications	R&A only	45	3	0	0	3
Additive Manufacturing Technology	R&A only	45	3	0	0	3
Computer-Integrated Manufacturing (CIM)	R&A only	45	3	0	0	3
Industrial Internet of Things and Industry 4.0	R&A only	45	3	0	0	3
Deep Learning for Autonomous Systems	R&A only	45	3	0	0	3
Digital Manufacturing	R&A only	45	3	0	0	3

Based on the proposed verticals, **all the members** suggested to give broader verticals list so that relevant courses can be pooled together. The Suggested verticals are Intelligent Automation, Smart Manufacturing, Digital Manufacturing, Intelligent Systems and Control, Autonomous Systems etc.

ITEM No.6: Proposed MDC Courses and Open Elective for Other Departments

- The Chairperson presented the detailed syllabus content for proposed MDC courses and open elective for other departments for the members' approval.

Proposed List of Multi-Disciplinary Courses (MDC) to be passed in R&A Board:

Course Code/ Course Title	Department	Contact hours	L	T	P	C
Medical Robotics	BME	45	2	0	2	3
Artificial Intelligence for Robotics	M Tech CSE	45	3	0	0	3
Industry 4.0	ECE	45	2	0	2	3
Smart Buildings and Automation	Civil	45	3	0	0	3
AI for Mechanical Systems Laboratory	Mechanical	45	1	0	4	3

Proposed List of Open Elective Courses (OEC) offered to other departments:

Course Code/ Course Title	Department	Contact hours	L	T	P	C
AI Driven Robotics	All except R&A	45	3	0	0	3
Mechatronics and Automation	All except R&A	45	3	0	0	3

- The members reviewed the detailed syllabus content presented by the Chairperson and provided their comments and suggestions for further improvement.
- It was resolved that the suggestions provided by the members would be incorporated, and a summary of the action taken would be presented in the form of the following table.

Proposed MDC Courses	Suggestions and Comments
Medical Robotics	→ Dr. Kuppan Chetty suggested to add Robot configuration in Module 1 and move the topic “Work Space Analysis” to module 1 and recommended to revamp the other contents suitably. The Course objective also to be modified with simple statements.
Artificial Intelligence for Robotics	→ All the Members suggested to check the course contents of AI driven Robotics offered in Open Elective Category. → Mr.Vasanthakumar suggested to add the topic AI agents.
Industry 4.0	→ Mr.Vasanthakumar suggested to add experiments based on Industry 4.0 and integration of assets using Byte Factory Software.
Smart Buildings and Automation	→ All the Members suggested to reduce the overall content for better manageability.
AI for Mechanical Systems Laboratory	→ All the Members suggested to check the lab hardware and software facilities to include both the experiments with equal weightage.

Proposed MDC Courses	Suggestions and Comments
Action Taken Medical Robotics ✓ Based on the recommendation, the topic Robot Configuration has been added to Module I. ✓ The topic Workspace Analysis has been shifted to Module I to provide a stronger conceptual foundation at the beginning of the course. Artificial Intelligence for Robotics ✓ As suggested by the committee members, the course contents were reviewed in comparison with the course “AI Driven Robotics” offered under the Open Elective category to avoid duplication of topics. ✓ Based on the suggestion of Mr. Vasanthakumar, the topic AI agents has been included in the syllabus to strengthen the AI decision-making aspects in robotic systems. Industry 4.0 ✓ Based on the suggestion of Mr. Vasanthakumar, laboratory experiments related to Industry 4.0 concepts and asset integration have been included using Byte Factory Software to provide practical exposure to smart manufacturing environments. Smart Buildings and Automation ✓ As recommended by the committee members, the overall course content has been streamlined and reduced to ensure better coverage of key topics within the prescribed contact hours. AI for Mechanical Systems Laboratory ✓ Based on the suggestion of the members, the availability of laboratory hardware and software resources has been reviewed. ✓ The experiments have been restructured to ensure balanced inclusion of both hardware-based and software-based experiments with equal weightage, enabling effective hands-on learning for students.	

Proposed Open Elective Courses	Suggestions and Comments
AI Driven Robotics	→ All the members suggested that the course contents are easy for CSE students but it is quite tough for Civil and Mechanical Engineering Students. → All the members suggested to restructure the course contents with general and simple content suitable to offer for all discipline of students.
Mechatronics and Automation	→ All the members suggested that the course contents are OK.
Action Taken AI Driven Robotics → Based on the feedback of the committee members, the course contents were reviewed and restructured to ensure that the topics are simplified and made more general, so that students from all engineering disciplines can understand and benefit from the course.	

Proposed List of Multi-Disciplinary Courses (MDC) passed in other departments:

Course Code/ Course Title	Board	Contact hours	L	T	P	C
Design for Manufacturing and Assembly	Mechanical	45	3	0	0	3
AI with Data Analytics	AIDS	45	2	0	2	3
Industrial Data Networking	ECE	45	3	0	0	3
Electric Vehicle Technology *	EEE	45	3	0	0	3
Drone Technology *	Aero	45	3	0	0	3

Proposed List of Skill Enhancement Courses (SEC):

Course Code/ Course Title	Department	Contact hours	L	T	P	C
Jetson Nano for Robotics	All	30	1	0	2	2
Raspberry Pi Programming for Robotics	All	30	1	0	2	2
RS Logix for Industrial Automation	All	30	1	0	2	2
SLAM Navigation	All	30	1	0	2	2
C# & .Net Programming	All	30	1	0	2	2
Java Programming Basics	All	30	1	0	2	2

Dr. Kuppan Chetty suggested to include courses like Robot Programming, CNC Programming, ROS programming under SEC Category. The SEC Courses can be framed based on the Job description given by the industry for the specific job requirement.

Proposed List of Liberal Arts Courses (LAC):

Course Code/ Course Title	Department	Contact hours	L	T	P	C
Accounting and Taxation	All	30	2	0	0	2

Proposed List of Value-Added Courses: (Non-Technical Courses)

Course Code/ Course Title	Department	Contact hours	L	T	P	C
Digital Marketing	All	30	1	0	2	2

ITEM No.7: Ratification of certain courses passed in previous BoS (Semesters I to IV under R2025:

- Indian Perspectives on Health and Lifestyle Management (Course Code: 25RA2102)” has been proposed under the HSSM category for the II Semester as part of the Indian Knowledge Systems (IKS) initiative.
- It is proposed that students may also be permitted to enroll in other IKS-related courses offered by different departments of the institution, subject to availability and approval, to encourage interdisciplinary learning and broader exposure to Indian knowledge traditions.
- Electrical Machines (Course Code: 25RA2203)” has been proposed under the ESC category for the III Semester. The name has been already proposed in EIE Board. Hence it is to be renamed as “**Electrical Machines for Automation**”.

General Suggestions/Comments by the members for B.E. Robotics and Automation Programme:

- All members appreciated the well-balanced credit distribution across the courses in various semesters. They also commended the emphasis placed on proposed SEC and MDC courses Value Added Courses which contribute significantly to improving students’ soft skills, career readiness, and placement opportunities.
- The proposed courses for Semesters V and VI were reviewed in detail, and members suggested a few minor modifications in the syllabus content to ensure a well-structured and balanced curriculum for the Robotics students.

Item 8: PG-Proposed Curriculum Structure under Regulation 2026 – M.Tech Robotics and Artificial Intelligence:

Proposed Curriculum Structure for M.Tech Robotics and Artificial Intelligence:

S. No.	Category	Regulations 2026
1	Professional Core Courses (PCC)	39
2	Professional Electives (PEC)	12
3	Multidisciplinary Elective Courses (MDC)	03
4	Skill Enhancement Courses (SEC)	02
5	Value Added Courses (VAC)	02
6	Experiential Learning Courses (ELC) (R2025)	02
7	Research Project Courses (RPC)	15
8	Ability Enhancement Courses (AEC)	Non-Credited
Total Credits		75

Proposed credits - Regulation 2026 – M.Tech Robotics and Artificial Intelligence:

S. No	Category	Credits per Semester				Total Credits
		I	II	III	IV	
1	Professional Core Courses (PCC)	21	18			39
2	Professional Electives (PEC)		03	09		12
3	Multidisciplinary Minor Courses (MDC)			03		03
4	Skill Enhancement Courses (SEC)		02			02
5	Value Added Courses (VAC)	02				02
6	Experiential Learning Courses (ELC)				02	02
7	Research Project Courses (RPC)			03	12	15
	Total	23	23	15	14	75

Proposed courses and syllabus content for Semester-I – M.Tech Robotics and AI:

SEMESTER – I						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Computational Methods for Robotics and AI	PC	60	3	0	2	4
Industrial Robotic Systems and Programming	PC	45	3	0	0	3
Sensors and Actuators in Robotics	PC	45	1	0	4	3
Deep learning for computer vision	PC	60	3	0	2	4
Artificial Intelligence and Expert Systems	PC	45	3	0	0	3
Research Methodology & IPR	VAC	30	2	0	0	2
Robotics Systems Laboratory – I	PC	30	0	0	4	2
AI Programming Laboratory – I	PC	30	0	0	2	1
Microcontroller Programming Laboratory-I	PC	30	0	0	2	1
Total			15	0	16	23

Common Agenda
UG Programmes
RR2020 & RR2020

- It is resolved that Revised Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2022, 2023 & 2024.
- It is resolved that Regulations 2025 (Outcome-based Curriculum through Choice-based Credit System) will be followed for all B.E./B.Tech/M.Tech (Int). programmes for students admitted in the Academic year 2025 and onwards.
- It is resolved that the curriculum and syllabi for the following new courses under Regulations 2025 be approved and passed

Fifth Semester:

S.No	Course Code	Course Title	Credits
1	25RA2300	Design of Automated Mechanical Systems	4
2	25RA2301	Power Electronics and Motor Drives	3
3	25RA2302	Embedded Systems in Robotics	3
4	25AIXXXX	AI with Data Analytics	3
5	25RA2370	Power Electronics and Motor Drives Laboratory	1
6	25RA2371	Embedded Systems in Robotics Laboratory	1

Sixth Semester:

S.No	Course Code	Course Title	Credits
1	25MEXXXX	Total Quality Management	3
2	25RA2303	Mobile Robotics and ROS	2
3	25ECXXXX	Industrial Data Networking	3
4	25RA2350	Control Systems for Automation	3
5	25RA2372	Mobile Robotics and ROS Laboratory	1
6	25RA2373	Data structures with C Laboratory	1
7	25RA2374	Multi-disciplinary Project	2

- It is resolved that the syllabi for the following new Professional Elective courses under Regulations 2025 be approved and passed
 - **25RA2316** - Automotive Electronics
 - **25RA2317** - Robot Dynamics and Control
 - **25RA2318** - Welding Technology for Robotic Applications

- **25RA2319** - Additive Manufacturing Technology
 - **25RA2320** - Computer-Integrated Manufacturing (CIM)
 - **25RA2321** - Industrial Internet of Things and Industry 4.0
 - **25RA2322** - Deep Learning for Autonomous Systems
 - **25RA2323** - Digital Manufacturing
- It is resolved that the syllabi for the following new Open Elective courses under Regulations 2025 be approved and passed.
- **25RA2330** - AI Driven Robotics
 - **25RA2331** - Mechatronics and Automation
- It is resolved that the syllabi for the following new multidisciplinary courses (MDC) under Regulations 2025 be approved and passed. (If applicable)
- **25RA2345** - Artificial Intelligence for Robotics
 - **25RA2346** - Smart Buildings and Automation
 - **25RA2360** - Medical Robotics
 - **25RA2361** - Industry 4.0
 - **25RA2362** - AI for Mechanical Systems Laboratory
- It is resolved that the syllabi for the following new Ability Enhancement Courses (AEC) under Regulations 2025 be approved and passed. (If applicable) – **Nil**
- It is resolved that the syllabi for the following new Skill Enhancement Courses (SEC) under Regulations 2025 be approved and passed. (If applicable)
- **25RA2335** - Jetson Nano for Robotics
 - **25RA2336** - Raspberry Pi Programming for Robotics
 - **25RA2337** - RS Logix for Industrial Automation
 - **25RA2338** - SLAM Navigation
 - **25RA2339** - C# & .Net Programming
 - **25RA2340** - Java Programming Basics

- It is resolved that the syllabi for the following new Value-Added Courses (VAC) under Regulations 2025 be approved and passed. (If applicable)

➤ **25RA2341** - Digital Marketing

- It is resolved that the syllabi for the following new Liberal Arts Courses (LAC) under Regulations 2025 be approved and passed. (If applicable)

➤ **25RA2342** - Accounting and Taxation

- **It is resolved that the following NPTEL courses are approved for credit transfer during April/May 2026:**

NPTEL Course Code	Course Title	Credit	Duration	Equivalent SREC Course	No of Students
noc25_me154	Automation in Manufacturing	3	12	20RA2E51 Automation in Industry 4.0	15
noc25_cs146	Introduction to Industry 4.0 and Industrial Internet of Things	3	12	20RA2E51 Automation in Industry 4.0	6
noc25_mg135	Automation in Production Systems and Management	3	12	20RA2E21 Digital Manufacturing	13

- It is resolved that the Result Analysis for the Academic Year 2024 – 2025 (Semesters VII/ V/ III/ I) are approved and passed.

Year	SEMESTER	Over all % of Pass						
		Batch						
		2019 - 2023	2020 - 2024	2021 - 2025	2022 - 2026	2023 - 2027	2024- 2028	2025- 2029
No of student intake		64	59	66	64	64	60	63
I Year	I	54	91*	67	68	74	79	58
	II	100*	97*	58	77	50	69	

II Year	III	86*	90*	60	53	73	74	
	IV	94	47	60	73	78		
III Year	V	97	51	67	80	76		
	VI	81	80	92	81			
IV Year	VII	98	71	92	94			
	VIII	98	100	100				
No of students Graduated		64	50	55				

- It is resolved that the new courses and its syllabi be approved for the Honors / Minor in B.E.

Robotics and Automation degree programme – **if any**

S.No	Course Code	Course Title	Credits	Mode of Delivery	Offered by
Nil					

- It is resolved that the following Honors/Minor courses are offered during the odd semester of Academic Year 2025 – 2026 and the following eligible students be approved for the Honors / minora in B.E. Robotics and Automation degree programme – **if any (Nil)**
- It is resolved that the following Mandatory courses be approved for the student in B.E. Robotics and Automation degree programme – Nil
- It is resolved that the following students had completed 4/6 weeks of Internship/Inplant training be approved for the student in B.E. Robotics and Automation degree programme

Batch: 2022 - 2026

S.No	Industry	No. of Students Completed
1.	Purie Robotics, Coimbatore	1
2.	GD Industries, Coimbatore	4
3.	Synapse Robotics, Coimbatore	1
4.	Shree Technologies A Franchisee Prolific Systems & Technologies, Coimbatore	2
5.	Orange Sorting Machines Pvt Ltd, Coimbatore	2
6.	Goat Robotics	1

Batch: 2023 - 2027

S.No	Industry	No. of Students Completed
1.	Falcon Toolings, Coimbatore	3
2.	Greenmech Automation, Coimbatore	1
3.	Emglitz Technologies, Coimbatore	1
4.	Brainery Spot Technology, Coimbatore	2
5.	Robotics FA Solutions, Coimbatore	3
6.	Kanil IT Solutions, Coimbatore	6
7.	Techvolt Software Pvt Ltd, Coimbatore	5
8.	Carrer Ladder, Coimbatore	5
9.	Nxtlogic Software Solutions, Coimbatore	4
10.	Medsby Healthcare & Engineering Solutions, Coimbatore	6
11.	Sandfits Foundations, Coimbatore	1

Batch: 2024 - 2028

S.No	Industry	No. of Students Completed
1.	Hindustan Coca-Cola Company, Chennai	1
2.	Skyx Aerospace Pvt Ltd, Coimbatore	1
3.	Galexon Robotics, Coimbatore	9
4.	Chola Machines LLP, Coimbatore	1
5.	Profenna Technologies, Coimbatore	1
6.	Sakthi Auto Ancillary Pvt Ltd, Coimbatore	2

- Readmitted / transferred student details (if applicable) – to be included.

Ragul Govindaraju (2010060) – 2020-2024 batch is readmitted in the 3rd year batch of 2023-2027 batch.

- Credit balance for the Readmitted / transferred students (if applicable) – to be included.

PG - M.E./M.Tech Programmes

- It is resolved that the PG Regulations 2022 will be followed for the students admitted from academic year 2024 and 2025.
- It is resolved that the syllabi for the following new Professional Elective courses under Regulations 2022 for M.E./M.Tech programmes be approved and passed. – Nil
- It is resolved that the PG Regulations 2026 will be followed for all M.E./M. Tech programmes for the students admitted in the academic year 2026 and onwards.
- It is resolved that the curriculum structure be approved for the new courses under the regulation 2026.

S.No	Course Code	Course Title	Credits
1	26RA1001	Computational Methods for Robotics and AI	4
2	26RA1002	Industrial Robotic Systems and Programming	3
3	26RA1003	Sensors and Actuators in Robotics	3
4	26RA1004	Deep learning for computer vision	4
5	26RA1005	Artificial Intelligence and Expert Systems	3
6	*****	Research Methodology & IPR	2
7	26RA1051	Robotics Systems Laboratory – I	2
8	26RA1052	AI Programming Laboratory – I	1
9	26RA1053	Microcontroller Programming Laboratory-I	1

- It is resolved that the syllabi for the following new professional Core Course in first semester under regulations 2026 be approved and passed.

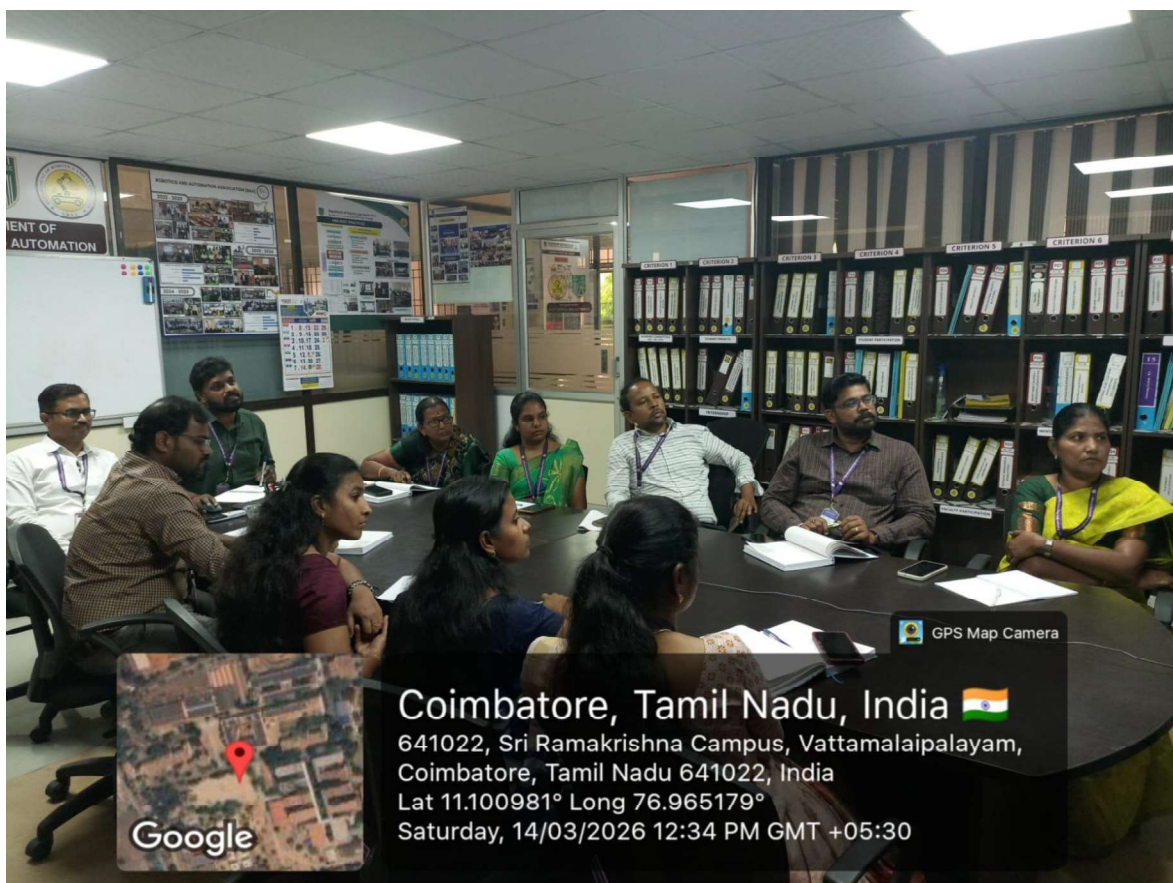
Suggestions given by the Members:

Sem	Proposed Course Name	Suggestions and Comments
I	Sensors and Actuators in Robotics	→ Dr. Kuppan Chetty suggested to include the electrical actuators in the module 2.
I	Robotics Systems Laboratory – I	→ Dr. Kuppan Chetty suggested to revamp the experiments and modify the sentence structure suitably to conduct the experiments at PG Level

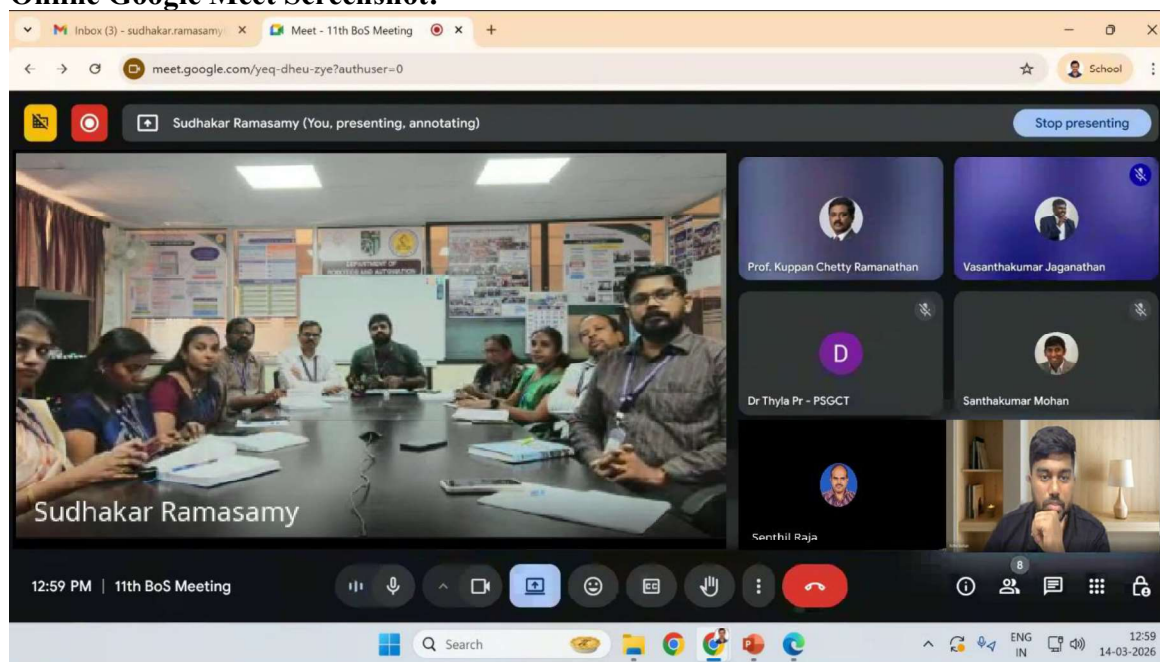
Action Taken

- ✓ Based on the suggestion electrical actuators have been incorporated into Module 2. The revised module now includes detailed coverage of electric actuators such as DC motors, stepper motors, and servo motors, along with their working principles, control methods, advantages, and industrial applications in robotic systems.
- ✓ As recommended, the laboratory experiments have been thoroughly reviewed and revamped. The experiments have been upgraded to align with postgraduate (PG) level expectations by incorporating advanced concepts, improved problem-solving components, and analytical elements.

Offline Photos:



Online Google Meet Screenshot:



Google Meet Details:

Saturday, March 14 · 11:00am – 12:30pm

Time zone: Asia/Kolkata

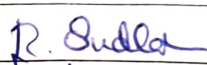
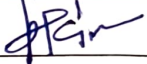
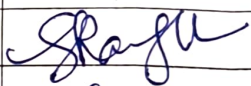
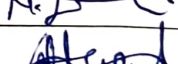
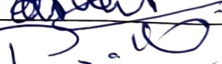
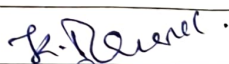
Google Meet link: <https://meet.google.com/yeq-dheu-zye>

Google Meet Attendance Sheet:

First name	Last name	Email	Duration	Time joined	Time exited
Vasanthakumar	Jaganathan	vasa*****@***.com	2 hr	11:01 AM	1:01 PM
Santhakumar	Mohan	sant*****@***.in	1 hr 57 min	11:03 AM	1:01 PM
Dr Thyla Pr	- PSGCT	prt.****@***.in	2 hr 1 min	11:00 AM	1:01 PM
Senthil	Raja	sent*****@***.com	2 hr 1 min	11:00 AM	1:01 PM
Prof. Kuppan Chetty	Ramanathan	kupp*****@***.edu	2 hr 1 min	11:00 AM	1:01 PM
Sudhakar	Ramasamy	sudhakar.ramasamy@srec.ac.in	2 hr 1 min	11:00 AM	1:01 PM
Richie	Soshan	rich*****@***.com	2 hr 1 min	11:00 AM	1:01 PM

Date: 14.03.2026

Detailed Attendance Sheet:

Name of the Member	Designation	Signature
Dr.A. Murugarajan	Chairman	
Dr.P.R. Thyla	University Nominee	Attended Online
Dr.R. Senthilraja	University Nominee	Attended Online
Dr. Santhakumar Mohan	Expert from IIT	Attended Online
Dr Kuppan Chetty Ramanathan	Subject Expert from Other University	Attended Online
Mr.J. Vasanthakumar	Industry Expert	Attended Online
Mr. Arjun Sridhar	Industry Expert	ABSENT
Mr. Richie Soshan	Meritorious Alumni	Attended Online
Dr. R.Sudhakar	Department Coordinator (RA)	
Dr. A.Kishore kumar	Faculty Member	
Dr. M.S.Sureshkumar	Faculty Member	ABSENT
Dr. G.Ranjitham	Faculty Member	
Dr. P.Devendran	Faculty Member	
Mr. S.Sarveswaran	Faculty Member	
Mrs. N.Dheerthi	Faculty Member	
Mrs. G.Hemalatha	Faculty Member	
Mrs. J.M. Priyadharsheni	Faculty Member	
Mr. A.Peniel Winifred Raj	Faculty Member	ABSENT
Mrs. K.Prashanthini	Faculty Member	
Mrs.R.Deeksha	Faculty Member	


CHAIRPERSON
BOARD OF STUDIES
 Department of Robotics and Automation
 Chairman
 Board of Studies



Minutes of the Meeting-11th BoS-14 March 2026-Dept of Robotics and Automation

Santhakumar Mohan <santhakumar@iitpkd.ac.in>

Sun, Mar 29, 2026 at 10:51 AM

To: HoD Robotics & Automation <hod-ra@srec.ac.in>

Cc: Dr Thyla Pr - PSGCT <pri.mech@psgtech.ac.in>, Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>

Dear Professor,

Thank you for your kind email and efforts.

The draft minutes are fine with me and consider this email as my approval for the same.

Best regards,

[Quoted text hidden]

--

Santhakumar Mohan

Professor, Mechanical Engineering

IIT Palakkad

<https://iitpkd.ac.in/people/santhakumar>



Minutes of the Meeting-11th BoS-14 March 2026-Dept of Robotics and Automation

Dr Thyla Pr - PSGCT <prt.mech@psgtech.ac.in>

Mon, Mar 30, 2026 at 12:19 PM

To: Santhakumar Mohan <santhakumar@iitpkd.ac.in>

Cc: HoD Robotics & Automation <hod-ra@srec.ac.in>, Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>

Dear Dr.A.Murugarajan,

1 approve the minutes of the 11th Board of Studies (BoS) meeting for the B.E. Robotics and Automation programme and M.Tech Robotics and AI held on 14th March 2026 (online).

With best regards,

Dr P R Thyla

Professor

Department of Mechanical Engineering

PSG College of Technology

Coimbatore - 641004, Tamilnadu, India.

[Quoted text hidden]



SRI RAMAKRISHNA ENGINEERING COLLEGE

[Educational Service : SNR Sons Charitable Trust]

Vattamalaipalayam, N.G.G.O. Colony Post,
Coimbatore – 641022.



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MINUTES OF THE TENTH BOARD OF STUDIES (BoS) MEETING FOR THE UG ROBOTICS AND AUTOMATION PROGRAMME AND PG ROBOTICS AND ARTIFICIAL INTELLIGENCE PROGRAMME HELD ON **08.11.2025** AT **11.30 AM** IN THE DEPARTMENT BOARD ROOM, DEPARTMENT OF ROBOTICS AND AUTOMATION.

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.P.R. Thyla Professor, Department of Mechanical Engineering PSG College of Technology, Coimbatore – 641004	University Nominee
3	Dr.R.Senthilraja Head, Department of Automobile Engineering Government College of Engineering (IRTT), Erode	University Nominee
4	Dr.Santhakumar Mohan Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Subject Expert from outside the Parent University to be nominated (preferably IISc/IITs/NITs)
5	Dr Kuppan Chetty Ramanathan Professor, Mechatronics at the School of Mechanical Engineering, SASTRA Deemed University, Thanjavur - 613401	Subject Expert from the parent university (Preferably from Government/ Aided Organization)
6	Mr. J. Vasanthakumar Senior Manager – Control & Automation M/s Hirotec India Limited Coimbatore – 641035	Industry Expert
7	Mr. Arjun Sridhar Head – Technology Development Division, Craftsman Automation, Coimbatore	Industry Expert
8	Mr.Richie Soshan (Batch: 2019-2023) Project Engineer, M/s Soliton Technologies Limited Coimbatore - 641014	Meritorious Alumnus

9	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
11	Dr.M.S.Sureshkumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
13	Mrs.N.Dheerthi, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
14	Mrs.G.Hemalatha, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
15	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Mr. A.Peniell Winifred Raj, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
17	Mrs.S.Prashanthini, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
18	Ms.K.Roobini, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
19	Ms.R.Deeksha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
20	Dr.K.Sukkiramathi, Assistant Professor (Sl.G) Department of Mathematics / SREC	Faculty Member

Prof. A. Murugarajan, Chairperson, Board of Studies, presided over the meeting and welcomed all members to the 10th BoS meeting. After a brief introduction of the committee members, he presented an overview of the department's highlights and achievements, including student internships, placements, and higher studies, as well as student participation and accomplishments. He further elaborated on the features of the R2025 Curriculum, the distribution of credits and curriculum structure, and the detailed syllabus for the 3rd and 4th semesters under the R2025 Regulation.

Further, the agenda items were discussed, and the following resolutions were passed.

ITEM No.1: Regulations 2025 and Distribution of Credits

- The Chairperson outlined the key features of the **Regulations 2025**, which had been discussed in detail during the previous **Board of Studies (BoS)** meeting. Furthermore, the **credit distribution and courses for Semesters I and II** had already been approved in the earlier BoS meeting.

- In addition, the **proposed distribution of credits across various categories for Semesters III to VIII**, with an average of 21 credits per semester, was presented for the members' review and approval.
- **It was resolved by the members to approve the proposed semester-wise credit distribution**

Category	I Sem	II Sem	III Sem	IV Sem	V Sem	VI Sem	VII Sem	VIII Sem	Total Credits
HSSM	4	4				3	3		14
BSC	9	5	4						18
ESC	6	6	4	2					18
PCC	2	3	9	11	11	8	6		50
PEC					3	3	6	6	18
OEC				3	3				6
MMC				3	3	3			9
AEC		2	2	2					6
SEC			2		2				4
VAC				2		2			4
LAC						2			2
ELC				2		2	2	6	12
Total Credits	21	20	21	25	22	23	17	12	161

ITEM No.2: Proposed Curriculum Structure

- The Chairperson presented the comprehensive curriculum structure for Semesters III to VIII and list of Value-Added Courses of the Undergraduate Programme. He highlighted the courses proposed for Semesters III to VIII, emphasizing their relevance to the field of Robotics and Automation and the justification for their inclusion in the respective semesters.
- It was resolved that the members would provide their comments and suggestions after reviewing the detailed syllabus content under the respective agenda item.

SEMESTER – III						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Elements of Robotics	PCC	30	2	0	0	2

Fluid Power Systems for Automation	PCC	45	3	0	0	3
Kinematics and Dynamics	PCC	45	3	0	0	3
Electrical Machines	ESC	30	2	0	0	2
Theory Cum Laboratory (T&L) Courses						
Mathematical Methods for Robotics	BSC	60	3	0	2	4
Digital Electronics for Automation	ESC	45	1	0	2	2
Laboratory & Project Courses						
Fluid Power Systems Laboratory	PCC	30	0	0	2	1
AEC/LAC/SEC/VAC Courses						
3D Modelling and Printing	SEC	30	1	0	2	2
Soft Skills-I / Foreign Languages (T&L)	AEC	30	1	0	2	2
Total			16	0	10	21

SEMESTER – IV						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
CNC Automation and Robotic Metrology	PCC	45	3	0	0	3
PLC, HMI and SCADA Systems Design	PCC	45	3	0	0	3
Robot Dynamics and Manipulator Design	PCC	45	3	0	0	3
Open Elective-I	OEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Python Programming with OOPS / Automated (Or) Manufacturing Process Planning and Cost Estimation	MMC	45	2	0	2	3
Analog Electronics for Automation	ESC	45	1	0	2	2
Laboratory & Project Courses						
Robot Programming and Simulation Laboratory	PCC	30	0	0	2	1
PLC, HMI and SCADA Systems Laboratory	PCC	30	0	0	2	1
Mini Project	ELC	30	0	0	4	2
AEC/LAC/SEC/VAC Courses						
Soft Skills-II	AEC	30	1	0	2	2
Non-Technical Courses	VAC	30	1	0	2	2
Total			17	0	16	25

Note: UHV – Mandatory Course to be offered for total duration of 30 Hours in 3rd and 4th Semester

SEMESTER – V						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Machine Design for Automation / Design and Analysis of Machine Elements in Automation	PCC	45	3	0	0	3
Power Electronics and Drives	PCC	45	3	0	0	3
Microcontrollers and Embedded Design	PCC	45	3	0	0	3
Professional Elective-I	PEC	45	3	0	0	3
Open Elective-II	OEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
AI with Data Analytics	MMC	45	2	0	2	3
Laboratory & Project Courses						
Power Electronics and Drives Laboratory	PCC	30	0	0	2	1
Microcontrollers and Embedded Design Laboratory	PCC	30	0	0	2	1
AEC/LAC/SEC/VAC Courses						
Jetson Nano/Raspberry Pi Programming / Programming with C# and .Net /Java Programming/ RS Logics / SLAM Navigation	SEC	30	1	0	2	2
Total			18	0	8	22

SEMESTER – VI						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Total Quality Management/Project Management and Industrial Practices	HSSM	45	3	0	0	3
Mobile Robotics and ROS	PCC	30	2	0	0	2
Industrial Networking and Communication Protocol	MMC	45	3	0	0	3
Professional Elective-II	PEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Control Systems for Automation	PCC	45	2	0	2	3
Data structures with C	PCC	30	1	0	2	2
Laboratory & Project Courses						
Mobile Robotics and ROS Laboratory	PCC	30	0	0	2	1
Multi-disciplinary Project	ELC	30	0	0	4	2
AEC/LAC/SEC/VAC Courses						
Non-Technical Courses	VAC	30	1	0	2	2

SEMESTER – VI						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Yoga/Vedic Maths/ Cultural Heritage in India/Accounting & Law/ Art & Craft/Dance	LAC	15	0	0	2	2
Total			15	0	14	23

SEMESTER – VII						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Technological Innovation Management And Entrepreneurship Product Life Cycle Management	HSSM	45	3	0	0	3
Digital Twin and Industry 5.0	PCC	45	3	0	0	3
Professional Elective-III	PEC	45	3	0	0	3
Professional Elective-IV	PEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Robotic Perception and Intelligent Systems	PCC	30	1	0	2	2
Laboratory Courses						
Smart Factory Automation Laboratory	PCC	30	0	0	2	1
Internship	ELC	30	0	0	4	2
Total			12	0	6	17

SEMESTER – VIII						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Professional Elective - V	PEC	45	3	0	0	3
Professional Elective - VI	PEC	45	3	0	0	3
Project Work	ELC	-	0	0	12	6
Total			6	0	12	12

List of Value-Added Courses: (Non-Technical Courses)

Course Code/ Course Title	Department	Contact hours	L	T	P	C
Infographic Tools and Techniques	All	30	1	0	2	2

ITEM No.3: Proposed Courses and Syllabus Content in 3rd & 4th Semesters:

- The Chairperson presented the detailed syllabus content for Semesters III and IV of the Undergraduate Programme for the members' approval.
- The members reviewed the detailed syllabus content presented by the Chairperson and provided their comments and suggestions for further improvement.
- It was resolved that the suggestions provided by the members would be incorporated, and a summary of the action taken would be presented in the form of the following table.

Sem	Proposed Course Name	Suggestions and Comments
III	Elements of Robotics	→ All the members suggested including topics related to machine safety and removing the contents on robot kinematics in Module 2. → Dr. Kuppan Chetty recommended renaming Module 2 for better clarity and relevance, and He also suggested including robot safety topics in Module 4.
Action Taken ✓ The contents on kinematics basics have been removed, and topics related to robot safety standards have been shifted to Module 4. ✓ The title of Module 2 has been renamed in accordance with the suggestions provided by the members.		

Sem	Proposed Course Name	Suggestions and Comments
III	Kinematics and Dynamics	→ Prof. Thyla mam suggested renaming the course as “Kinematics and Dynamics of Machinery.” → Dr. Santhakumar inquired about the depth of coverage for the vibration topic, seeking clarification on whether it includes introductory concepts or synthesis-level content.
Action Taken ✓ The course title has been revised to “Kinematics and Dynamics of Machinery” as suggested. ✓ The vibration topic has been restricted to introductory-level coverage, based on the members' feedback.		

Sem	Proposed Course Name	Suggestions and Comments
III	Electrical Machines	→ Dr. Kuppan Chetty suggested rearranging the modules as: Module 1 – Transformers, Module 2 – DC Generators, and Module 3 – AC and Special Machines, which was agreed upon by all the members. → He also recommended including the selection criteria of machines in Module 2.
Action Taken ✓ The modules have been rearranged as suggested: Module 1 – Transformers, Module 2 – DC Generators, and Module 3 – AC and Special Machines. ✓ The selection criteria of machines have been included in Module 2 as recommended.		

Sem	Proposed Course Name	Suggestions and Comments
III	Mathematical Methods for Robotics	→ All members appreciated the theory-cum-lab format of the course. → Dr. Kuppan Chetty and Dr. Shanthakumar recommended removing the “Fourier Series” content and retaining only “Fourier Transforms”, as it is more relevant and beneficial for robotic applications. → The members suggested including the Runge-Kutta (RK) and Euler methods in the Numerical Methods module. → Mr. Richie Soshan inquired about the software tools used for conducting the laboratory experiments.
Action Taken ✓ The “Fourier Series” content has been removed, retaining only “Fourier Transforms” to enhance relevance to robotic applications. ✓ The Runge-Kutta (RK) and Euler methods have been included in the Numerical Methods module. ✓ The laboratory experiments will be carried out using MATLAB and additional practical hours will be introduced to strengthen conceptual understanding.		

Sem	Proposed Course Name	Suggestions and Comments
III	Digital Electronics for Automation	→ Dr. Kuppan Chetty suggested including the textbook by Malvino on Digital Principles and recommended adding another book that aligns with the practical components of the course.
Action Taken ✓ The textbook “<i>Digital Principles and Applications</i>” by Malvino has been included in the reference list. Additionally, an appropriate book relevant to the practical content has been added to support laboratory exercises.		

Sem	Proposed Course Name	Suggestions and Comments
IV	CNC Automation and Robotic Metrology	→ Dr. Kuppan Chetty and Dr. Senthilraja suggested including the fundamentals of metrology and mechanical measurement characteristics in the respective module. → Dr. Kuppan Chetty also remarked that the allocation of 12 hours for the final module is insufficient to cover the content effectively.
Action Taken ✓ The topics on Fundamentals of Metrology and Mechanical Measurement Characteristics have been incorporated into the relevant module. ✓ The duration for the final module has been reviewed and suitably increased to ensure adequate coverage of the content.		

Sem	Proposed Course Name	Suggestions and Comments
IV	PLC, HMI and SCADA Systems Design	→ Members enquired about the inclusion of Advanced PLC topics in the course and further suggested incorporating Advanced PLC concepts related to robotic integration under the Professional Elective courses.
Action Taken ✓ Based on the suggestions, topics on Advanced PLC and its applications in robotic integration have been proposed for inclusion under the Professional Elective courses to enhance industry relevance and practical exposure.		

Sem	Proposed Course Name	Suggestions and Comments
IV	Robot Dynamics and Manipulator Design	→ Dr. Santhakumar suggested renaming the course, as the current syllabus content does not include design aspects. Alternatively, design-related topics may be incorporated within the modules. → It was recommended to reduce the duration for <i>Trajectory Planning</i> from 15 hours to 8 hours. → Dr. Thyla enquired about the inclusion of the <i>Static Force Analysis</i> topic in Module II. → Mr. Vasanthakumar suggested removing the topics related to <i>2 DOF</i> and <i>3 DOF Manipulators</i>.
Action Taken ✓ The course will be renamed “Robot Manipulator Dynamics”, with redundant topics such as 2 DOF and 3 DOF Manipulators removed. The duration for Trajectory Planning will be reduced, and the inclusion of Static Force Analysis will be clearly specified. ✓ Dr. Santhakumar expressed his willingness to review the course and extend his support in revising the syllabus to align with both academic and industrial requirements.		

ITEM No.4 Proposed Open Elective and MMC Courses for Other Departments

- The Chairperson presented the detailed syllabus content for proposed open elective and MMC courses for other departments for the members' approval.

List of Multi-Disciplinary Minor Courses (MMC) offered to other departments:

Multi-Disciplinary Minor Courses (MMC)						
Course Code/ Course Title	Department	Contact hours	L	T	P	C
Robot Path Planning and Simulation	AIDS	45	2	0	2	3
Robot Programming Fundamentals	IT	45	2	0	2	3
Cobots in Automation	CSE	45	3	0	0	3
Industrial Internet of Things	Mechanical	45	3	0	0	3
Robotics Technology	Mechanical	45	3	0	0	3

List of Open Elective Courses (OEC) offered to other departments:

Open Elective Courses (OEC)						
Course Code/ Course Title	Department	Contact hours	L	T	P	C
Robotics and Automation in Industry 4.0	All except R&A	45	3	0	0	3
Exploring Robots	All except R&A	45	3	0	0	3

- The members reviewed the detailed syllabus content presented by the Chairperson and provided their comments and suggestions for further improvement.
- It was resolved that the suggestions provided by the members would be incorporated, and a summary of the action taken would be presented in the form of the following table.

Proposed MMC Courses	Suggestions and Comments
Robot Path Planning and Simulation	→ It was recommended to add Basics of Mobile Robotics and to revisit the contents of Module I for better alignment → Dr. Santhakumar proposed removing the D-H analysis topics from the syllabus
Robot Programming Fundamentals	→ Members suggested merging the courses “Robot Path Planning and Simulation” and “Robot Programming Fundamentals,” incorporating common contents relevant to the AIDS and IT Departments.
Cobots in Automation	→ Dr. Kuppan Chetty recommended reducing the overall content for better manageability.

Proposed MMC Courses	Suggestions and Comments
Industrial Internet of Things	→ Members suggested offering this course in 6 th semester instead of 4 th semester since there is no prerequisite for this course and further advised reducing the content across all modules.
Action Taken → Basics of Mobile Robotics as suggested. Module I has been reviewed and updated accordingly. The D-H analysis topics have been removed. → As suggested by the members, the Chairperson concluded that there are no prerequisites for the IT Department to study Robotics. It was recommended to retain Robot Programming Fundamentals with content specifically relevant to the IT domain. → The content is suitable revised and it was proposed to offer the IIoT course for the Mechanical Department in the 4th semester to ensure better academic progression and course alignment.	

Proposed Open Elective Courses	Suggestions and Comments
Exploring Robots	→ Dr. Santhakumar suggested renaming the course title, as the existing title appears somewhat confusing and misleading. → Dr. Kuppam Chetty recommended removing topics such as pitch, yaw, and roll from the module and proposed renaming the course as “Building Robot”.
Action Taken → The course has been renamed “Building Robot”, and the topics related to pitch, yaw, and roll have been removed from the relevant module as per the members recommendation.	

Proposed VAC	Suggestions and Comments
Infographic Tools and Techniques	→ The members suggested that the course could be more effectively handled by faculty from the Management department. → It was recommended to include topics such as AI Agents, Intellectual Property Rights (IPR) issues, and Copyrights. → It was also proposed that the course be extended to M.E./M.Tech students and Research Scholars.
Action Taken → The suggestions were reviewed and will be considered during the course allocation process, based on the availability of faculty from the Management department. → The course content will be revised to include topics on AI Agents, IPR issues, and Copyrights. → It is proposed to extend the course to M.E./M.Tech students and Research Scholars in the upcoming curriculum revision.	

General Suggestions/Comments by the members

- All members appreciated the well-balanced credit distribution across the courses in various semesters. They also commended the emphasis placed on proposed SEC and MMC courses Value Added Courses which contribute significantly to improving students' soft skills, career readiness, and placement opportunities.
- The proposed courses for Semesters III and IV were reviewed in detail, and members suggested a few minor modifications in the syllabus content to ensure a well-structured and balanced curriculum for the Robotics students.
- Members recommended the inclusion of a course on Grippers / End of Arm Tooling as part of the Professional Electives in the later semesters.
- While reviewing the NPTEL courses proposed for inclusion in the B.E. Robotics and Automation and M.Tech Robotics and Artificial Intelligence programs for the current academic year, members suggested removing the course "Industrial Robotics: Theories for Implementation", as its contents are already covered under the Robot Kinematics and Dynamics course.
- The following NPTEL courses are proposed for inclusion in the B.E. Robotics and Automation and M.Tech Robotics and Artificial Intelligence program for the current academic year.

Course	Offered by	Level	Duration	Credit
Microrobotics	IIT Indore (Prof. I.A. Palani)	UG/PG	12 Weeks	03
Foundations of Cyber Physical Systems	IIT Kharagpur (Prof. Soumyajit Dey)	UG/PG	12 Weeks	03
Computer Networks and Internet Protocol	IIT Kharagpur (Prof. Soumya Kanti Ghosh, Prof. Sandip Chakraborty)	UG/PG	12 Weeks	03

**Common Agenda
UG Programmes
RR2020**

- It is resolved that Revised Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2022, 2023 & 2024.
- It is resolved that the syllabi for the following new Professional Elective courses under (Revised) Regulations 2020 be approved and passed – **Nil**
- It is resolved that the syllabi for the following new Open Elective courses under (Revised) Regulations 2020 be approved and passed. – **Nil**
- It is resolved that the following new one credit courses will be included under (Revised) Regulations 2020 for B.E. Robotics and Automation programme. - (if applicable). – **Nil**
- It is resolved that the following new value added courses will be included under (Revised) Regulations 2020 for B.E. Robotics and Automation programme. - (if applicable). – **Nil**
- It is resolved that the following NPTEL courses are approved for credit transfer during Nov/Dec 2025. - (if applicable).

NPTEL Course Code	Course Title	Credit	Duration	Equivalent SREC Course	No of Students
noc24_me27	Computer Integrated Manufacturing	3	12	20RA2E21 Digital Manufacturing	9
noc24_cs34 / noc24_cs95	Introduction to Industry 4.0 and Industrial Internet of Things	3	12	20EC2E54 – Internet of Things	16

- It is resolved that the Result Analysis for the Academic Year 2024 – 2025 (Semesters VIII/ VI/ IV/ II) are approved and passed.

Year	SEMESTER	Over all % of Pass					
		Batch					
		2019 - 2023	2020 - 2024	2021 - 2025	2022 - 2026	2023 - 2027	2024- 2028
No of student intake		64	59	66	64	64	60

I Year	I	54	91*	67	68	74	79
	II	100*	97*	58	77	50	69
II Year	III	86*	90*	60	53	73	
	IV	94	47	60	73	78	
III Year	V	97	51	67	80		
	VI	81	80	92	81		
IV Year	VII	98	71	92			
	VIII	98	100	100			
No of students Graduated		64	50	55			

- It is resolved that the new courses and its syllabi be approved for the Honors / Minor in B.E.

Robotics and Automation degree programme – **if any**

S.No	Course Code	Course Title	Credits	Mode of Delivery	Offered by
Nil					

- It is resolved that the following Honors/Minor courses are offered during the odd semester of Academic Year 2025 – 2026 and the following eligible students be approved for the Honors / minora in B.E. Robotics and Automation degree programme – **if any (Nil)**

- It is resolved that the following Mandatory courses be approved for the student in B.E. Robotics and Automation degree programme

Batch: 2022 - 2026

S.No	Mandatory Course	Course Code	No. of Students Completed
1.	Personality character and development	-	-
2.	Allied skills	20MC275	1

Batch: 2023 - 2027

S.No	Mandatory Course	Course Code	No. of Students Completed
1.	Personality character and development	-	7
2.	Allied skills	20MC275	7

Batch: 2024 - 2026

S.No	Mandatory Course	Course Code	No. of Students Completed
1.	Personality character and development	-	1
2.	Allied skills	20MC275	Nil

- It is resolved that the following students had completed 4/6 weeks of Internship/Inplant training be approved for the student in B.E. Robotics and Automation degree programme

Batch: 2022 - 2026

S.No	Industry	No. of Students Completed
1.	Pricol Limited, Coimbatore	1
2.	Goat Robotics, Coimbatore	1
3.	NxtGen Instruments, Erode	3
4.	Robomiracle, Coimbatore	1
5.	Dotworld Technologies, Coimbatore	1
6.	GD Industries, Coimbatore & Prolific Systems and Technologies, Coimbatore	4

Batch: 2023 - 2027

S.No	Industry	No. of Students Completed
1.	Yoi Robotics Laboratory, Coimbatore	4
2.	Effica Automation, Coimbatore & United Enterprises, Coimbatore	3
3.	Kanil IT Solutions, Coimbatore & Titan Company Limited, Coimbatore	1

- Readmitted / transferred student details (if applicable) – to be included.
Aswin A (71812210008) – 2022-2026 batch is readmitted in the 3rd year batch of 2023-2027 batch.
- Credit balance for the Readmitted / transferred students (if applicable) – to be included.

R2025

- It is resolved that Regulations 2025 (Outcome-based Curriculum through Choice-based Credit System) will be followed for all B.E./B.Tech/M.Tech (Int). programmes for students admitted in the Academic year 2025 and onwards.
- It is resolved that the Curriculum and Syllabi be approved for the following new courses in 3rd and 4th semesters:

Third Semester:

S.No	Course Code	Course Title	Credits
1	25RA2200	Elements of Robotics	2
2	25RA2201	Fluid Power Systems for Automation	3
3	25RA2202	Kinematics and Dynamics of Machinery	3
4	25RA2203	Electrical Machines	2
5	25MA2116	Mathematical Methods for Robotics	4
6	25RA2250	Digital Electronics for Automation	2
7	25RA2270	Fluid Power Systems Laboratory	1

Fourth Semester:

S.No	Course Code	Course Title	Credits
1	25RA2204	CNC Automation and Metrology	3
2	25RA2205	PLC, HMI and SCADA Systems Design	3
3	25RA2206	Robot Manipulator Dynamics	3
4	25RA2251	Analog Electronics for Automation	2
5	25RA2271	Robot Programming and Simulation Laboratory	1
6	25RA2272	PLC, HMI and SCADA Systems Laboratory	1
7	25RA2273	Mini Project	2

- It is resolved that the syllabi for the following new Professional Elective courses under Regulations 2025 be approved and passed. (If applicable) – **Nil**
- It is resolved that the syllabi for the following new Open Elective courses under Regulations 2025 be approved and passed. (If applicable)
 - **25RA2230** - Robotics and Automation in Industry 4.0
 - **25RA2231** - Building Robot
- It is resolved that the syllabi for the following new Multidisciplinary Elective courses (MDC) under Regulations 2025 be approved and passed. (If applicable)
 - **25RA2240** - Cobots in Automation
 - **25RA2241** - Industrial Internet of Things
 - **25RA2242** - Robotics Technology
 - **25RA2260** - Robot Path Planning and Simulation

➤ **25RA2261** - Robot Programming Fundamentals

- It is resolved that the syllabi for the following new Ability Enhancement courses (AEC) under Regulations 2025 be approved and passed. (If applicable) – **Nil**
- It is resolved that the syllabi for the following new Skill Enhancement courses (SEC) under Regulations 2025 be approved and passed. (If applicable)

25RA2235 - 3D Modelling and Printing

- It is resolved that the syllabi for the following new Value-Added courses (VAC)) under Regulations 2025 be approved and passed. (If applicable)

25RA2236 - Infographic Tools and Techniques

- It is resolved that the syllabi for the following new Liberal Arts courses (LAC)) under Regulations 2025 be approved and passed. (If applicable) - **Nil**
- It is resolved that the following Mandatory courses be approved for the student in B.E. Robotics and Automation degree programme. (If applicable)

➤ **Universal Human Values (30 Hours Duration in 3rd and 4th Semesters)**

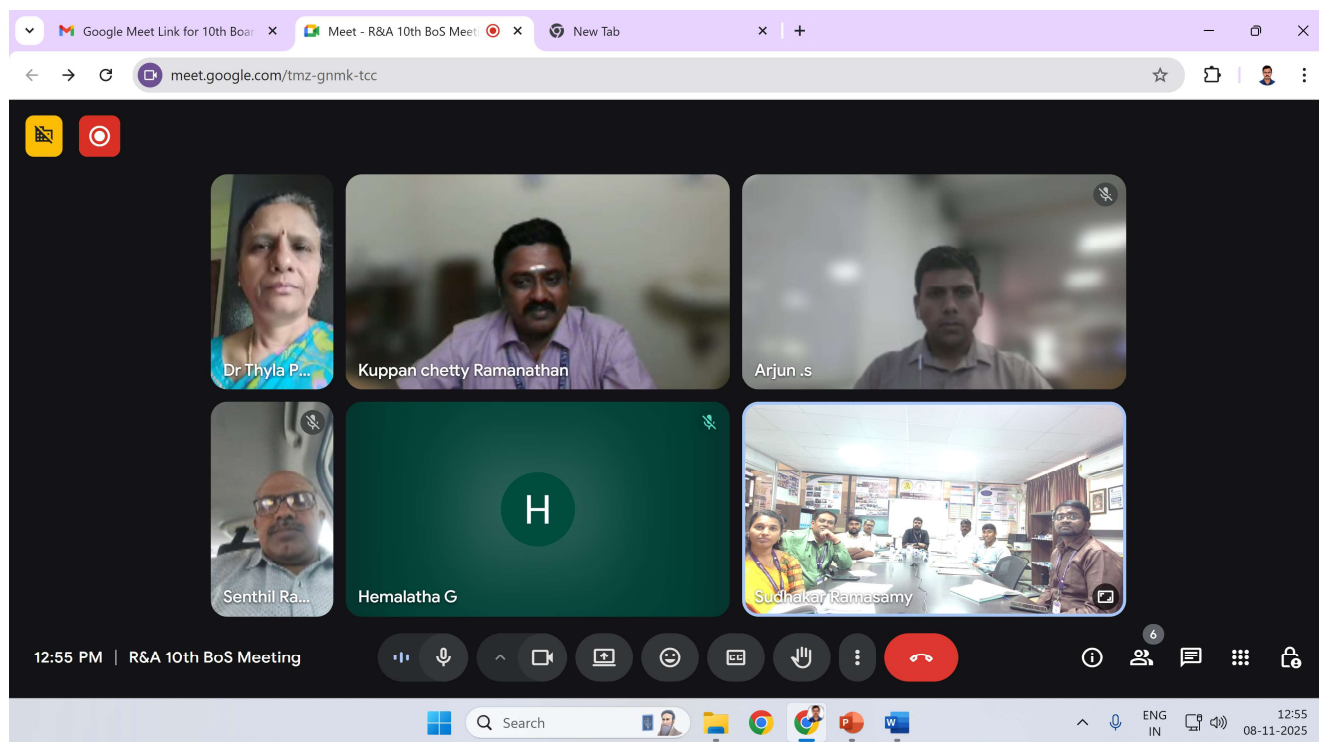
PG - M.E./M.Tech Programmes

- It is resolved that the PG Regulations 2022 will be followed for the students admitted from academic year 2022 and onwards.
- It is resolved that the syllabi for the following new Professional Elective courses under Regulations 2022 for M.E./M.Tech programmes be approved and passed. **(If applicable) - Nil**
- It is resolved that the following NPTEL courses are approved for credit transfer during Nov/Dec 2025. - (if applicable). – **Nil**

Board of Studies Meeting - Offline Photos:



Board of Studies Meeting – Online Photos:

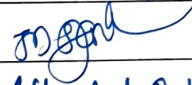
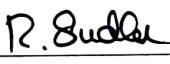
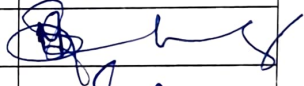
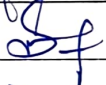
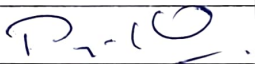
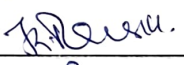
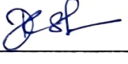
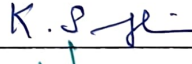


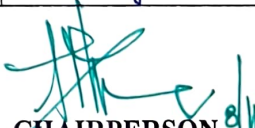
Online Attendance Sheet:

First name	Last name	Email	Duration	Time joined	Time exited
Arjun	.s	arju****@***.com	1 hr 51 min	11:05 AM	12:56 PM
Hemalatha	G	hemalatha.g@srec.ac.in	1 hr 58 min	10:59 AM	12:57 PM
Dr Thyla Pr	- PSGCT	prt.****@***.in	1 hr 16 min	11:40 AM	12:56 PM
Senthil	Raja	sent*****@***.com	1 hr 17 min	11:39 AM	12:56 PM
Kuppan chetty	Ramanathan	rmku****@***.com	1 hr 51 min	11:05 AM	12:56 PM
Sudhakar	Ramasamy	sudhakar.ramasamy@srec.ac.in	1 hr 52 min	11:05 AM	12:57 PM

Date: 08.11.2025

Detailed Attendance Sheet:

Name of the Member	Designation	Signature
Dr.A. Murugarajan	Chairman	
Dr.P.R. Thyla	University Nominee	Attended Online
Dr.R. Senthilraja	University Nominee	Attended Online
Dr. Santhakumar Mohan	Expert from IIT	
Dr Kuppan Chetty Ramanathan	Subject Expert from Other University	Attended Online
Mr.J. Vasanthakumar	Industry Expert	
Mr. Arjun Sridhar	Industry Expert	Attended Online
Mr. Richie Soshan	Meritorious Alumni	
Dr. R.Sudhakar	Department Coordinator (RA)	
Dr. A.Kishore kumar	Faculty Member	ABSENT
Dr. M.S.Sureshkumar	Faculty Member	
Mr. S.Sarveswaran	Faculty Member	
Mrs. N.Dheerthi	Faculty Member	
Mrs. G.Hemalatha	Faculty Member	Attended Online
Mrs. J.M. Priyadharsheni	Faculty Member	
Mr. A.Peniel Winifred Raj	Faculty Member	
Mrs. K.Prashanthini	Faculty Member	
Mrs.R.Deeksha	Faculty Member	
Dr.K.Sukkiramathi	Faculty Member	


CHAIRPERSON
BOARD OF STUDIES
 Department of Robotics and Automation
 Chairman
 Board of Studies



SRI RAMAKRISHNA ENGINEERING COLLEGE

[Educational Service : SNR Sons Charitable Trust]

[Autonomous Institution, Reaccredited by NAAC with 'A+' Grade]

[Approved by AICTE and Permanently Affiliated to Anna University, Chennai]

[ISO 9001:2015 Certified and all eligible programmes Accredited by NBA]

VATTAMALAIPALAYAM, N.G.G.O. COLONY POST, COIMBATORE – 641 022.



MINUTES OF THE **NINTH** BOARD OF STUDIES (BoS) MEETING FOR THE UG ROBOTICS AND AUTOMATION PROGRAMME HELD ON **22.03.2025 AT 9.30 AM** IN DEPT BOARD ROOM, DEPARTMENT OF ROBOTICS AND AUTOMATION.

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.P.R. Thyla Professor, Department of Mechanical Engineering PSG College of Technology, Coimbatore – 641004	University Nominee
3	Dr.R.Senthilraja Head, Department of Automobile Engineering Government College of Engineering (IRTT), Erode	University Nominee
4	Dr.Santhakumar Mohan Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Subject Expert from outside the Parent University
5	Dr Kuppan Chetty Ramanathan Professor, Mechatronics at the School of Mechanical Engineering, SASTRA Deemed University, Thanjavur - 613401	Subject Expert from Other University/Govt Aided Colleges
6	Mr. J. Vasanthakumar Senior Manager – Control & Automation M/s Hirotec India Limited Coimbatore – 641035	Industry Expert
7	Mr. Arjun Sridhar Head – Technology Development Division, Craftsman Automation, Coimbatore	Industry Expert
8	Mr.Richie Soshan (Batch: 2019-2023) Project Engineer, M/s Soliton Technologies Limited Coimbatore - 641014	Meritorious Alumnus

9	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
10	Dr.A.Kishore kumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
11	Dr.M.S.Sureshkumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
13	Mrs.N.Dheerthi, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
14	Mrs.G.Hemalatha, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
15	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Mr. A.Peniel Winifred Raj, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
17	Mr.S.Krishnakumar, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
18	Mrs.S.Prashanthini, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
19	Ms.K.Roobini, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member

Prof. Dr. A. Murugarajan, Chairperson, Board of Studies, chaired the meeting and welcomed all the members to the 9th BoS meeting. After a brief introduction to the various committee members in the Board of Studies. He presented an overview of the department road map and highlights, laboratory facilities, distribution of credits and curriculum structure (RR2020), research innovation and extension activities, student internships, placement and higher studies, student participation and achievements. Further, the agenda items listed were taken up for discussion and the following resolutions were passed.

ITEM No.1: Proposed Regulations 2025:

Key points proposed:

- ✓ Total No of Credit: 161
- ✓ B.E/B.Tech with Specialization/Minor degree
- ✓ B.E/B.Tech with Honours degree
- ✓ Introduction of AEC/MMC/SEC courses
- ✓ VAC/Liberal Arts and Mandatory Courses
- ✓ Field or Community projects

- ✓ Mini/Multidisciplinary projects in II & III year
- ✓ Enhanced Assessment methods
- ✓ Implementation of Digital Learning Platforms
- ✓ Self-Learning/Term Work

Suggestion Given and Action Taken for the Proposed Regulations 2025:

S.No	Points Discussed	Suggestions Given	Action Taken
1	Multidisciplinary Minor Courses (MMC)	Dr. Kuppan Chetty and Dr. Santhakumar recommended reviewing the "Multidisciplinary Minor Courses" category, as "minor" may conflict with B.E./B.Tech Minors. Also, they suggested clarifying the distinction between courses offered under open electives and multidisciplinary courses.	The suggestions have been acknowledged and forwarded to the Chairman of Academic Council for discussion in the Standing Committee Meeting (SCM)
2	Term Work & Self Learning Components in Evaluation Criteria (Theory)	• Dr. Kuppan Chetty, Dr. Santhakumar, and other members are seeking clarification on the assessment and evaluation process for term work and self-learning components. • They expressed concerns that no of activities in self-learning / term work mapping with each course and student is a complex and time-consuming task.	The suggestions have been acknowledged and forwarded to the Chairman of Academic Council in the Standing Committee Meeting, where the guidelines or standardized assessment criteria will be proposed.
3	Assessment Methods	Dr. Kuppan Chetty suggested incorporating unconventional assessments (project-based assessment rather than writing test) in at least one theory course to enhance higher-order thinking skills.	The suggestions have been acknowledged and forwarded to the COE and Chairman of the Academic Council for discussion
4	B.E./ B.Tech Honors / Specialization / Minors	All members sought clarification on the requirement that students must pass all courses on the first attempt to be eligible for a Specialization/Minors degree. They emphasized the need for an alternative provision in case a student fails a course while pursuing a minor degree.	The suggestions have been acknowledged and forwarded to the Chairman of the academic council for discussion
		Dr. Kuppan Chetty and Dr. Santhakumar suggested that flexibility in eligibility criteria to opt for specialization/minor courses would encourage more students to enroll.	The suggestions are noted, and check the eligibility criteria followed by the Anna University Regulations and norms for specialization/minor degree

S.No	Points Discussed	Suggestions Given	Action Taken
5	Theory cum Laboratory: More weightage for Lab Assessments (30 % weightage)	- Dr. Kuppan Chetty and Dr. Santhakumar recommended increasing the weightage of laboratory assessments in Theory-cum-Laboratory (T&L) courses. - Dr. Thyla suggested to verifying the Anna University guidelines for Lab-Integrated courses assessment criteria. - Dr. Thyla also recommended renaming “Cycle Test-I” to “Cycle Test” in T&L assessments.	The provided suggestions and recommendations are noted and further to be discussed in the SCM with Chairman of Academic Council
6	No of Credits in Proposed Regulations 2025	- Dr. Santhakumar inquired about the reduction in only one credit compared to the previous regulations. - He also noted that at IIT, the total number of credits, including minors, is approximately 144	The revised curriculum has been proposed with the inclusion of various categories, such as AEC, SEC, and LAC.

Distribution of Credits under various categories in various semesters is **proposed for the member's approval.**

Proposed credits (Regulations 2025)										
S. No	Category	Credits per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1	Humanities and Social Sciences & Management courses (HSSM)	3	3				3	3		12
2	Basic Sciences Courses (BSC)	9	5	4						18
3	Engineering Science Courses (ESC)	6	6	6						18
4	Professional Core Courses (PCC)	2	3	11	14	11	6	3		50
5	Professional Electives (PEC)					3	3	6	6	18
6	Open Electives (OEC)			3	3					6
7	Experiential Learning Courses (ELC)				2		2	2	6	12
8	Multidisciplinary Minor Courses (MCC)				3	3	3			9
9	Ability Enhancement Courses (AEC)		2		2	2				6

10	Skill Enhancement Courses (SEC)			1		1	2			4
11	Value Added Courses (VAC)					2	2			4
12	Liberal Arts Courses (LAC)	1	1				1	1		4
13	Mandatory Courses (MC)		NC		NC		NC			-
	Total	21	20	25	24	22	22	15	12	161

ITEM No.2: Proposed Curriculum Structure:

SEMESTER – I						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Algebra, Differential Calculus and Transforms	BSC	60	3	1	0	4
Physics in Technological Applications	BSC	30	2	0	0	2
Chemistry in Technological Applications	BSC	30	2	0	0	2
Problem-solving using C	ESC	30	2	0	0	2
Automation in Manufacturing/Manufacturing and Automation for Robotics	PCC	30	2	0	0	2
தமிழர் மரபு	LAC	15	1	0	0	1
Theory Cum Laboratory (T&L) Courses						
Elements of Electrical Circuits and Electronic Devices	ESC	45	2	0	2	3
Business and Corporate Communication	HSSM	60	2	0	2	3
Laboratory Courses						
Basic Sciences Laboratory (Physics and Chemistry)	BSC	30	0	0	2	1
Programming in C Laboratory	ESC	30	0	0	2	1
Total			16	1	8	21

SEMESTER – II						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Course						
Linear Algebra, Integral Calculus and Transforms	BSC	60	3	1	0	4
Engineering Mechanics	ESC	45	3	0	0	3
Indian Perspectives on Health and Lifestyle Management	HSSM	45	3	0	0	3



Biology for Engineers (Or) NeuroScience	BSC	15	1	0	0	1
தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	LAC	15	1	0	0	1
Theory Cum Laboratory Courses						
Sensors and Actuators (T&L)	PCC	45	2	0	2	3
Engineering Visualization / Graphics Laboratory	ESC	30	1	0	2	2
Laboratory Courses						
Functional English	AEC	30	0	0	4	2
Data Insights and Engineering Laboratory	ESC	30	0	0	2	1
Total			14	1	10	20

SEMESTER – III						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Mathematical Methods for Robotics or Computational Methods-I	BSC	60	3	1	0	4
Elements of Robotics (or) Foundations of Robotic Engineering	PCC	30	2	0	0	2
Pneumatics and Hydraulics in Automation	PCC	45	3	0	0	3
Kinematics and Dynamics or Kinematics and Design of Manipulators	PCC	45	3	0	0	3
Open Elective-I	OEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Electrical Motors and Actuators (T&L)	ESC	45	2	0	2	3
Electronics for Automation (T&L)	ESC	45	2	0	2	3
Data structures with C Lab Data Structures Laboratory	PCC	30	1	0	2	2
Laboratory Courses						
Pneumatics and Hydraulic Systems Laboratory	PCC	30	0	0	2	1
3D Modelling and Printing	SEC	30	0	0	2	1
Total			19	0	10	25

SEMESTER – IV						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Computational Algorithms and Methods	PCC	45	3	0	0	3
PLC and HMI Systems Design	PCC	45	3	0	0	3

Robot Dynamics and Manipulator Design	PCC	45	3	0	0	3
Microcontrollers and Embedded Design	PCC	45	3	0	0	3
Open Elective-II	OEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Python Programming with OOPS (T&L)	MMC	45	2	0	2	3
Soft Skills-I	AEC	30	1	0	2	2
Laboratory Courses						
Microcontrollers and Embedded Design Laboratory	PCC	30	0	0	2	1
PLC and HMI Programming Laboratory	PCC	30	0	0	2	1
Mini Project	ELC	30	0	0	4	2
Total			18	0	12	24
SEMESTER – V						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Design of Machinery and Automation Elements	PCC	45	3	0	0	3
Power Electronics and Drives	PCC	45	3	0	0	3
Professional Elective-I	PEC	45	3	0	0	3
Theory Cum Laboratory (T&L) Courses						
Control Systems for Automation (T&L)	PCC	45	2	0	2	3
AI with Data Analytics	MMC	45	2	0	2	3
Soft Skills-II	AEC	30	1	0	2	2
Cloud Computing/DBMS/AWS	VAC	30	1	0	2	2
Laboratory Courses						
Power Electronics and Drives Laboratory	PCC	30	0	0	2	1
Robot Programming and Simulation Laboratory	PCC	30	0	0	2	1
Jetson Nano/Raspberry Pi Programming	SEC	30	0	0	2	1
Total			15	0	14	22

SEMESTER – VI						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Industrial Engineering and Cost Estimation or Total Quality Management	HSSM	45	3	0	0	3
Industrial Networking and Communication Protocol	MMC	45	3	0	0	3
Mobile Robotics and ROS	PCC	30	2	0	0	2
Professional Elective-II	PEC	45	3	0	0	3

Theory Cum Laboratory (T&L) Courses						
Robotic Perception and Intelligent Systems Vision-Based Robotics and Intelligent Algorithms	PCC	30	1	0	2	2
RS Logics /SLAM Navigation	VAC	30	1	0	2	2
Laboratory Courses						
Mobile Robotics and ROS Laboratory	PCC	30	0	0	2	1
Smart Factory Automation Laboratory	PCC	30	0	0	2	1
Programming with C# and .Net /Java Programming	SEC	30	0	0	2	2
Multi-disciplinary Project	ELC	30	0	0	4	2
Yoga/Vedic Maths/ Cultural Heritage in India/Accounting & Law/ Art & Craft/Dance	LAC	15	0	0	2	1
Total			13	0	16	22

SEMESTER – VII						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Theory Courses						
Technological Innovation Management And Entrepreneurship Product Life Cycle Management	HSSM	45	3	0	0	3
Digital Twin and Industry 5.0	PCC	45	3	0	0	3
Professional Elective-III	PEC	45	3	0	0	3
Professional Elective-IV	PEC	45	3	0	0	3
Laboratory Courses						
Internship	ELC	30	0	0	4	2
Yoga/Vedic Maths/ Cultural Heritage in India/Accounting & Law/ Art & Craft/Dance	LAC	15	0	0	2	1
Total			12	0	6	15

SEMESTER – VIII						
Course Code/ Course Title	Category	Contact hours	L	T	P	C
Professional Elective-V	PEC	45	3	0	0	3
Professional Elective-VI	PEC	45	3	0	0	3
Project Work	ELC	-	0	0	12	6
Total			6	0	12	12

ITEM No.3: Proposed Courses and Syllabus Content in 1st & 2nd Semesters:

The following courses in the 1st and 2nd semesters are proposed under the robotics and automation board for the members' approval.

Semester 1:

1. Automation in Manufacturing / **Manufacturing and Automation for Robotics**
2. Elements of Electrical Circuits and Electronic Devices
3. Problem-solving using C
4. Programming in C Laboratory

Semester 2:

1. Sensors and Actuators (T&L)
2. Engineering Visualization / Graphics Laboratory
3. Data Insights and Engineering Laboratory

ITEM No.4: Proposed Courses for Other Departments:

Fundamentals of Robotics & AI is a proposed Course for the programme B.E Artificial Intelligence and Data Science in the semester I/II.

Item 2, 3 & 4: Suggestion Given and Action Taken for the Proposed Courses and Syllabus Content in 1st & 2nd Semesters of Regulation R2025:

S.No	Points Discussed on the proposed courses	Suggestion Given	Action Taken
1	Automation in Manufacturing / Manufacturing and Automation for Robotics (Semester 1)	All members suggested renaming the course to "Introduction to Manufacturing and Automation."	The course title will be reviewed in consideration of the suggestion and renamed as "Introduction to Manufacturing and Automation"
2	Sensors and Actuators (T&L) (Semester 2)	Dr. Thyla requested a review of potential content overlap on sensors between the courses "Physics in Technological Applications" and "Sensors and Actuators."	The syllabus content will be revised appropriately to eliminate any overlap between courses.
3	Engineering Mechanics (Semester 2)	Members approved the syllabus content but recommended adding topics on rigid bodies and solid mechanics or introducing a separate course in the third semester; the title suggested is Applied mechanics	• The members' suggestions have been acknowledged • The Chairperson decided to retain the course title "Computational Mechanics" as per the existing R2020 curriculum offered in Semester 2, which includes content on solid mechanics and mechanics of rigid bodies and is further to be approved by the members

S.No	Points Discussed on the proposed courses	Suggestion Given	Action Taken
4	Engineering Visualization / Graphics Laboratory (Semester 2)	All members suggested renaming the course to "Engineering Graphics Laboratory" and allocating more practical hours for manual drafting assignments.	The course title will be reviewed following the members' suggestions.
5	Pneumatics and Hydraulics in Automation (Semester 3)	All members suggested renaming the course to "Fluid Power Automation."	The course title will be reviewed based on the suggestion.
6	Elements of Robotics (Semester 3) & Robot Dynamics and Manipulator Design (Semester 4)	Dr. Kuppan Chetty suggested shifting the course "Elements of Robotics" from the 3 rd semester to the 4 th semester and "Robot Dynamics and Manipulator Design" from the 4 th semester to the 5 th semester.	The feasibility of shifting the courses will be evaluated, considering the prerequisites, and the proposal will be presented in the next BoS meeting.
7	PLC and HMI Systems Design (Semester 4)	All members suggested renaming the course to "PLC, HMI & SCADA."	The course title will be reviewed in consideration of the members' suggestions
8	Jetson Nano / Raspberry Pi Programming (Semester 5)	All members suggested renaming the course to "Microcontroller programming"	
9	Industrial Networking and Communication Protocol (Semester 6)	All members suggested renaming the course to "Industrial Networking and Communication".	
10	Mobile Robotics and ROS (Semester 6)	All members suggested renaming the course to "Autonomous Mobile Robotics" with 2 credits and ROS Laboratory for 1 credit.	
11	Digital Twin and Industry 5.0 (Semester 7)	Dr. Santhakumar Mohan suggested to rename the course as "Digital Twin and Industry 4.0/5.0".	
12	TQM & TPM	Mr. Vasanthakumar suggested incorporating TQM (Total Quality Management) / TPM (Total Productive Maintenance) into the curriculum.	The suggestion has been acknowledged. The inclusion of TQM / TPM in the curriculum will be reviewed for feasibility and proposed in the next BoS meeting.

S.No	Points Discussed on the proposed courses	Suggestion Given	Action Taken
13	Software related course in each semester	Dr. Thyla inquired about the inclusion of multiple software courses in the curriculum	The Chairperson justified the inclusion of software-related courses in each semester, emphasizing their relevance to placement opportunities and market demand.
		Dr. Thyla suggested that the Strength of Materials course could be included in the curriculum if software-related courses were removed, as it serves as a prerequisite for the course "Design of Machinery and Automation Elements."	The suggestions have been noted, and the possible inclusion of the course will be reviewed. However, the Chairperson plan to conduct bridge courses to fill the gap.
		Mr. Richie Soshan suggested that basic programming skills are essential for most software companies. He recommended offering courses like C#, Java, and .NET as Professional Elective Courses.	The suggestions have been noted. The Chairperson explained that such courses are already incorporated into various categories across semesters, and C#, Java, and .NET will be offered as Professional Electives .

General Suggestions/Comments from External Expert Members and University Nominee:

- Dr. Thyla congratulated and appreciated the efforts of the students for their participation in Techgium and other hackathon events. She also commended the efforts of students and faculty in completing consultancy work. Also suggested to review the Term Work component and assessment procedures for each course feasibility.
- All members acknowledged the balanced credit distribution across various courses in different semesters.

COMMON AGENDA
UG Programmes
RR2020

- It is resolved that Revised Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2022, 2023 & 2024.

- It is resolved that the syllabi for the following new Professional Elective courses under (Revised) Regulations 2020 be approved and passed. – Nil

Common Agenda 1- New one-credit course under RR 2020

It is resolved that the following new one credit courses will be included under (Revised) Regulations 2020 for B.E Robotics and Automation programme

Regulation	Course Code	Course Title	Industry Offering the Course
RR2020	20RAI013	Basic Electro-pneumatics for Industrial Automation	Offered by SMC Corporation Private Limited, Coimbatore

Common Agenda 2- NPTEL courses for credit transfer 2024-2025

It is resolved that the following NPTEL courses are approved for credit transfer during April/May 2025.

S.No	Course Code	Course Title	Credits	Course Duration	Equivalent Professional / Open Elective in SREC Curriculum
1	noc24_cs34 / noc25_cs43	Introduction to Industry 4.0 and Industrial Internet of Things	3	12 Weeks	20EC2E54 Internet of Things
2	noc25_me11	Computer Integrated Manufacturing	3	12 Weeks	20RA2E21 Digital Manufacturing
3	noc25_ee16	Deep learning	3	12 Weeks	20RA2E30 Deep Learning for Robotics
4	noc25_cs30	Embedded Systems Design	3	12 Weeks	20RA2E11 Embedded System & RTOS
6	noc25_ee12	Communication Networks	3	12 Weeks	20RA2E24 Industrial Computer Networks and Communication Protocols
7	noc25_cs41	Introduction to Embedded System Design	3	12 Weeks	20RA2E11 Embedded System & RTOS
8	noc25_ee76	Sensors And Actuators	3	12 Weeks	20RA2E10 Smart Sensors and Data Fusion

Common Agenda 3- Result Analysis

It is resolved that the Result Analysis for the Academic Year 2024 – 2025 (Semesters VII / V/ III) are approved and passed

Year	SEMESTER	Over all % of Pass				
		Batch				
		2019 -2023	2020 -2024	2021 - 2025	2022 -2026	2023 -2027
No of student intake		64	59	66	64	64
I Year	I	54	91	67	68	74
	II	100	97	58	77	50
II Year	III	86	90	60	53	73
	IV	94	47	60	73	
III Year	V	97	51	67	70	
	VI	81	80	92		
IV Year	VII	98	71	92		
	VIII	98	100			
No of students Graduated		64	50			

Common Agenda 4- Mandatory Courses- List of students completed:

It is resolved that the following Mandatory courses be approved for the student in B.E. Robotics and Automation degree programme

Batch: 2021 – 2025

S.No	Mandatory Course	Course Code	No. of Students Completed
	Nil		

Batch: 2022 - 2026

S.No	Mandatory Course	Course Code	No. of Students Completed
1.	Allied skills Technical certification-Industrial controller for Automation (PLC & SCADA	20MC275	64

Batch: 2023 - 2027

S. No	Mandatory Course	Course Code	No. of Students Completed
1.	Personality character and development - Robo Club	20MC220	4

Common Agenda 5- Internship details - List of students completed

It is resolved that the following students had completed 4/6 weeks of Internship / Inplant training be approved for the student in B.E. Robotics and Automation degree programme

Batch: 2021 - 2025

SI.No	Name of the Company	No. of Students
1.	Craftsman Automation, Coimbatore	1
2.	Microform Automation, Coimbatore	3
3.	Yoi Robotics, Coimbatore	4
4.	Flo Mobility Pvt Ltd, Bangalore	6
5.	Drona Automation Pvt Ltd, Bangalore	1
6.	Maxbyte Technologies, Coimbatore	1
7.	Roots Industries, Coimbatore	4
8.	Amex Alloys Pvt Ltd, Coimbatore	2
9.	Robomiracle Technologies Pvt Ltd, Coimbatore	1
10.	Salzer Electronics, Coimbatore	4
11.	Salesine Technologies Pvt Ltd, New Delhi	1
12.	NLC India Limited, Neyveli	1
13.	Hyundai, Chennai	3
14.	Adventure Technology Solutions PVT LTD, Coimbatore	4
15.	SMC Technologies, Coimbatore	4
16.	Bosco Soft Technologies Private Limited, Tirupattur	3
17.	Numaan Technologies, Theni	1

18.	Puma Technovation, Coimbatore	1
19.	Karthikesh Robotics	1
20.	Entudio Private Limited, Thirunelveli	1
Total No of Students		47

Batch 2022 - 2026

Sl.No	Name of the Company	No. of Students
1.	Robomiracle Technologies Pvt Ltd, Coimbatore	6
2.	KSB Limited, Coimbatore	1
3.	Thepush Robotics Pvt Ltd, Coimbatore	3
4.	RoboRam, Chennai	1
5.	Congent Automation, Coimbatore	1
6.	Orange Sorting Machines Pvt Ltd, Coimbatore	2
7.	Salzer Electronics Limited, Coimbatore	3
8.	Anaamalais Toyota, Coimbatore	3
9.	Innovative Engineering Services, Coimbatore	2
10.	Skyline Automation, Coimbatore	3
11.	GD Industries, Coimbatore	14
12.	Prolific Systems & Technologies, Coimbatore	5
13.	Biojenik Engineering, Chennai	1
14.	GTN Engineering (India) Ltd, Coimbatore	4
15.	IPCS Global Pvt Ltd, Salem	2
16.	Robotica Factory Automation Solutions, Coimbatore	1
17.	POETS Industrial Automation Systems, Coimbatore	1
18.	GOAT Robotics, Coimbatore	1
Total No of Students		54

Batch 2023 - 2027

Sl.No	Name of the Company	No. of Students
1.	Effica Automation, Coimbatore	4
2.	Titan Company Limited, Coimbatore	1
3.	Evolve Robot Lab, Chennai	2
Total No of Students		7

R2025

- It is resolved that the Proposed Regulations 2025 (Outcome based Curriculum through Choice based Credit System) be approved and passed.
- It is resolved that Regulations 2025 (Outcome based Curriculum through Choice based Credit System,) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2025 and onwards.

BoS Meeting Photos:



Board of Studies

2024-2025

9th Board of Studies Members

Date: 22.03.2025

University Nominee

Dr.Thyla PR
Professor and Head
Department of Mechanical Engineering,
PSG College of Technology, Coimbatore

Mr. Arjun Sridhar
iDOD of Technology, Development Division,
M/s. Craftsman Automation, Coimbatore

Dr.Senthilraja R
Head, Dept of Automobile Engineering
Govt. College of Engineering (RTT), Erode

Mr. Vasanthkumar
Senior Manager - Control & Automation
M/s Hiretec India Limited, Coimbatore

Subject Expert from IIT

Dr. Shanthakumar Mohan
Professor
Department of Mechanical Engineering
IIT Palakkad, Kanjikode

Subject Expert from Other University

Dr Kuppan Chetty Ramanathan
Professor
Mechatronics, School of Mechanical Engineering
SASTRA Deemed University, Thanjavur

Meritorious Alumni

Mr. Richie Soshan
(Batch: 2019-2023)
Project Engineer,
M/s Soliton Technologies Limited, Coimbatore

All the Faculty Members from Robotics and Automation

Dr Thyla Pr - PSGCT

SREC/R&A/BoS/March 2025/Dr.AMR 2

ONLINE ATTENDANCE: (Google Meet)

First name	Last name	Email	Duration	Time joined	Time exited
Hemalatha	G	hemalatha.g@srec.ac.in	8 min	10:48 AM	11:06 AM
Dr Thyla Pr	- PSGCT	prt.****@***.in	1 hr 52 min	9:51 AM	11:43 AM
Prashanthini K	RAE	prashanthini.k@srec.ac.in	1 hr 46 min	9:56 AM	11:43 AM
Priyadharsheni J M	RAE	priyadharsheni.j.m@srec.ac.in	1 hr 49 min	9:54 AM	11:44 AM
Sudhakar	Ramasamy	sudhakar.ramasamy@srec.ac.in	2 hr 7 min	9:37 AM	11:45 AM
KRISHNAKUMAR	S	krishnakumar.s@srec.ac.in	56 min	9:50 AM	10:46 AM

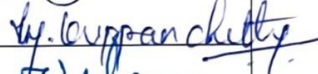
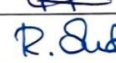
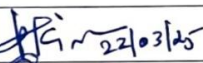
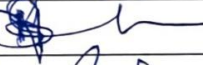
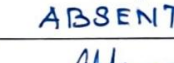
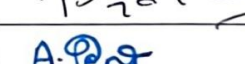
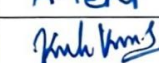
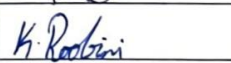
9th Board of Studies 2025

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9th Board of Studies Meeting

Date: 22.03.2025

Detailed Attendance Sheet:

Name of the Member	Designation	Signature
Dr.A.Murugarajan	Chairman	
Dr.P.R. Thyla	University Nominee	← Attended Online →
Dr.R.Senthilraja	University Nominee	
Dr.Shanthakumar Mohan	Expert from IIT	
Dr Kuppan Chetty Ramanathan	Subject Expert from Other University	
Mr.Vasanthkumar	Industry Expert	
Mr. Arjun Sridhar	Industry Expert	
Mr.Richie Soshan	Meritorious Alumni	
Dr.R.Sudhakar	Department Coordinator (RA)	
Dr.A.Kishore kumar	Faculty Member	
Dr.M.S.Sureshkumar	Faculty Member	
Mr.S.Sarveswaran	Faculty Member	
Mrs.N.Dheerthi	Faculty Member	ABSENT
Mrs.G.Hemalatha	Faculty Member	
Mrs. J.M. Priyadarsheni	Faculty Member	
Mr. A.Peniel Winifred Raj	Faculty Member	
Mr.S.Krishnakumar	Faculty Member	
Mrs.K.Prashanthini	Faculty Member	
Ms.K.Roobini	Faculty Member	


CHAIRPERSON
BOARD OF STUDIES
 Department of Robotics and Automation
 Chairman
 Board of Studies



Minutes of the Meeting-BoS- Robotics and Automation-Reg

Kuppan chetty Ramanathan <rmkuppan@gmail.com>
To: HoD Robotics & Automation <hod-ra@srec.ac.in>
Cc: Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>

Sat, Mar 29, 2025 at 5:02 PM

Dear Prof,

Greetings of the day!

I am fine with the minutes of the meeting.

Thanks and Regards
Dr. RM. Kuppan Chetty

[Quoted text hidden]

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With Best Regards

Dr. RM. Kuppan Chetty,

M.Tech., PHD (IITM), MIE.,MIET., C.Eng.,

Professor, School of Mechanical Engineering (SoME)

SASTRA Deemed to be University

Thanjavur. Tamil Nadu, 613 401.

Ph: +91-4362 350001-20 / Ext. 2120.

M: +91-9444030759

Email: kuppanchetty@mech.sastra.edu; rmkuppan@gmail.com

"அறிவற்றங் காக்குங் கருவி செலுவார்க்கும்
உள்ளழிக்க லாகா அரண்"

"Wisdom is a weapon to ward off destruction; it is an inner fortress which enemies cannot destroy"

"Wisdom is a weapon to ward off destruction; it is an inner fortress which enemies cannot destroy"



Minutes of the Meeting-BoS- Robotics and Automation-Reg

Dr Thyla Pr - PSGCT <prt.mech@psgtech.ac.in>

Tue, Apr 1, 2025 at 9:27 AM

To: HoD Robotics & Automation <hod-ra@srec.ac.in>

Cc: Senthil Raja <senthilrajairtt@gmail.com>, Kuppan chetty Ramanathan <rmkuppan@gmail.com>, Santha Kumar Mohan <santhakumar@iitpkd.ac.in>, erichiesoshan@gmail.com, Vasanthakumar J <vasanthakumar.j@hirotecindia.com>, arjun_s <arjun_s@craftsmanautomation.com>, Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>

Dear Dr Murugarajan,

Greetings of the day.

I have a remark on the course Computational mechanics.

Computational Mechanics is the application of numerical methods for understanding and predicting complex physical behaviour in engineering and science. The content of the course proposed is not computational mechanics. Please look into this.

With best regards,

Dr P R Thyla
Professor and Head
Department of Mechanical Engineering
PSG College of Technology
Coimbatore - 641004, Tamilnadu, India.

[Quoted text hidden]



Minutes of the Meeting-BoS- Robotics and Automation-Reg

Santhakumar Mohan <santhakumar@iitpkd.ac.in>

Tue, Apr 1, 2025 at 10:31 AM

To: HoD Robotics & Automation <hod-ra@srec.ac.in>

Cc: Senthil Raja <senthilrajairt@gmail.com>, Kuppan chetty Ramanathan <rmkuppan@gmail.com>, erichiesoshan@gmail.com, Vasanthakumar J <vasanthakumar.j@hirotecindia.com>, arjun_s <arjun_s@craftsmanautomation.com>, Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>, Dr Thyla Pr - PSGCT <pri.mech@psgtech.ac.in>

Dear Sir,

We have decided to keep applied mechanics. Please check if this is possible.

Thanks,

[Quoted text hidden]

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Santhakumar Mohan

Professor, Mechanical Engineering (IIT Palakkad)

Adjunct Professor, Engineering Design (IIT Madras)

Faculty Fellow, IIT Palakkad Technology Ihub Foundation (IPTIF)

Dean, Industry Collaboration and Sponsored Research (IIT Palakkad)

<https://iitpkd.ac.in/people/santhakumar>



SRI RAMAKRISHNA ENGINEERING COLLEGE, COIMBATORE – 22

[Educational Service : SNR Sons Charitable Trust]

[Autonomous Institution, Reaccredited by NAAC with 'A+' Grade]

[Approved by AICTE and Permanently Affiliated to Anna University, Chennai]

[ISO 9001:2015 Certified and all eligible programmes Accredited by NBA]

**MINUTES OF THE EIGHTH BOARD OF STUDIES MEETING FOR THE UG
ROBOTICS AND AUTOMATION PROGRAMME HELD ON 18.11.2024
THROUGH GOOGLE MEET PLATFORM FROM 2.00 PM to 2.45 PM.**

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.P.R. Thyla Professor, Department of Mechanical Engineering PSG College of Technology, Coimbatore – 641004	University Nominee
3	Dr.R.Senthilraja Head, Department of Automobile Engineering Government College of Engineering (IRTT), Erode	University Nominee
4	Dr.Shanthakumar Mohan Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Subject Expert from outside the Parent University to be nominated (preferably IISc/IITs/NITs)
5	Dr Kuppan Chetty Ramanathan Professor, Mechatronics at the School of Mechanical Engineering, SASTRA Deemed University, Thanjavur - 613401	Subject Expert from the parent university (Preferably from Government/ Aided Organization)
6	Mr.Vasanthkumar Senior Manager – Control & Automation M/s Hirotec India Limited Coimbatore – 641035	Industry Expert
7	Mr. Arjun Sridhar Head – Technology Development Division, Craftsman Automation, Coimbatore	Industry Expert

8	Mr.Richie Soshan (Batch: 2019-2023) Project Engineer, M/s Soliton Technologies Limited Coimbatore - 641014	Meritorious Alumnus
9	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
10	Dr.A.Kishore kumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
11	Dr.M.S.Sureshkumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
13	Mrs.N.Dheerthi, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
14	Mrs.G.Hemalatha, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
15	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Mr. A.Peniel Winifred Raj, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
17	Mr.S.Krishnakumar, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
18	Mrs.S.Prashanthini, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
19	Ms.K.Roobini, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member

Prof. Dr. A. Murugarajan, Chairperson, Board of Studies, chaired the meeting and welcomed all the members to the 8th BoS meeting. After a brief introduction to the various committee members in the Board of Studies. He presented an overview of the department road map, distribution of credits, curriculum structure (RR2020), curriculum development process, laboratory facilities, academic performance of two batches (2019-23 & 2020-24), placement and internship. Further, the agenda items listed were taken up for discussion and the following resolutions were passed.

ITEM No.1: Revision of Vision, Mission statement of the Institution

Existing Vision, mission statement of the institute and department is discussed. Further revision of vision and mission of the institution with key indicators are proposed to the members.

PROPOSED VISION	PROPOSED MISSION
To become a world-class university excelling in multidisciplinary engineering education through cutting-edge technologies and impactful societal contributions for sustainable development	Provide quality education that builds strong technical, analytical and managerial skills for future professionals. <i>(Deliver Quality Engineering Education) (M1)</i>
	Nurture creativity, innovation and research ecosystem for local and global needs <i>(Encourage Research and Innovation) (M2)</i>
	Foster ethics, leadership, entrepreneurial and life skills for holistic development <i>(Foster Holistic Growth) (M3)</i>
	Develop technological solutions that enhance sustainability and societal well-being through collaborations <i>(Contribute to Sustainable Development) (M4)</i>

Key Indicators	M1	M2	M3	M4
Multidisciplinary Engineering	3	2	3	2
Cutting-edge technologies	3	3	2	3
Impactful societal contributions	3	2	2	3
Sustainable development	2	2	3	3

Suggestion Given:

- The vision and mission statements were reviewed during the meeting.
- Dr. P.R. Thyla and Dr. R. Senthilraja, University Nominee members, suggested replacing the phrase “cutting-edge technologies” in the vision statement with “cutting-edge research.” However, Dr. Kuppan Chetty Ramanathan expressed his view that the vision and mission statements are satisfactory and fulfill the stated objectives. All other members agreed with the vision and mission statements without further modifications.

ITEM No.2: Result Analysis 2023-2024 – Even Semester

Result Analysis for the Academic Year 2023 – 2024 (Semesters VIII / VI/ IV/II) is discussed.

The details are enclosed in the below table for the approval of the members.

S. No	Description	Batch: 2020 -2024	Batch: 2021- 2025	Batch: 2022-2026	Batch: 2023-2027
1	Semester	VIII	VI	IV	II
2	Year	IV	III	II	I
3	No. of students registered in all the subjects	59	64	64	63
4	No. of students appeared in all the subjects	59	64	59	61
5	No. of students passed in all the subjects	59	59	44	30
6	Over all percentage	100	92.19	74.58	49.18

It is resolved that the Result Analysis for the Academic Year 2023 – 2024 (Semesters VIII / VI/ IV/II) are approved and passed.

ITEM No.3: Credit Transfer Details

Credit Transfer details through industrial one credit course, Direct Self Study and NPTEL courses are discussed. The details are enclosed in the below table for the approval of the members.

S.No	Semester	No of Students credit transferred through		
		Industrial One Credit Course	Direct Self-study	NPTEL
1	Odd	2020-2024 Batch – 33 2021-2025 Batch – 52	26	1
2	Even		29	1
Total No of Students		85	55	2

It is resolved that the following NPTEL courses are approved for credit transfer during November / December 2024.

S.No	Course Code	Course Title	Credits	Course duration	Equivalent Professional/open elective in SREC Curriculum
1.	noc24_me23	Robotics: Basics and Selected Advanced Concepts	3	12	20RA2E54 Robotic System Engineering
2.	noc24_me139	Automation in Manufacturing	3	12	20RA2E51 Automation in Industry 4.0
3.	noc24_cs34 / noc24_cs95	Introduction to Industry 4.0 and Industrial Internet of Things	3	12	20EC2E54 – Internet of Things
4.	noc24_me138	Fundamentals of Additive Manufacturing Technologies	3	12	20RA2E20 Additive Manufacturing and Tooling
5.	noc24_me126	Social Innovation in Industry 4.0	3	12	20RA2E51 Automation in Industry 4.0
6.	noc24_ee71	Communication Networks	3	12	20RA2E24 Industrial Computer Networks and Communication Protocols

- It is resolved that the Credit Transfer details for the academic year 2023 – 2024 are approved and passed.
- Members enquired about the type of industrial One Credit Courses (OCC) offered during the course of study.
- Further they asked about the certifications provided for one-credit courses, including the assessment pattern, the practical/hands-on training offered, and the duration.
- Additionally, they requested details regarding the eligibility criteria and assessment pattern for both internal and external examinations under the Direct Self Study (DSS) program.
- Mr. Vasanth Kumar emphasized that more industrial one-credit courses should be offered that foster creativity and focus on practical learning for the benefit of students.

ITEM No.4: Any other Matter

1. The new Regulation (R2025), aligned with the New Education Policy (NEP), is currently under preparation. The detailed curriculum and syllabus for the 1st and 2nd semester will be presented at the next BoS meeting scheduled during April 2025.
2. The program is in the process of applying for NBA accreditation in the upcoming months.
3. The consultancy work undertaken from the department of robotics and automation highlighted to the members.
4. Achievements of student participation in events such as Hackathons and Techgium, were discussed in the context of their relevance to NBA accreditation.

Suggestions/Comments from External Expert Members and University Nominee:

- All the members commended the department's progress, the updated laboratory facilities, and the efforts made to enhance the teaching and learning process.

UG Programmes:**R2020**

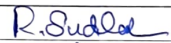
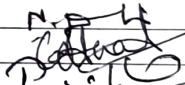
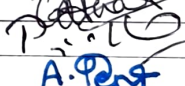
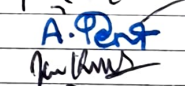
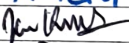
- It is resolved that Revised Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2021 & onwards.
- It is resolved that the following NPTEL courses are approved for credit transfer during Nov/Dec 2024.
 - noc24_me23 - Robotics: Basics and Selected Advanced Concepts
 - noc24_me139 - Automation in Manufacturing
 - noc24_cs34 / noc24_cs95 - Introduction to Industry 4.0 and Industrial Internet of Things
 - noc24_me138 - Fundamentals of Additive Manufacturing Technologies
 - noc24_me126 - Social Innovation in Industry 4.0

Google Meet Attendance:

First name	Last name	Email	Duration	Time joined	Time exited
Arjun	.s	arju****@***.com	35 min	2:06 PM	2:42 PM
Richie soshan	E	richiesoshan.1910035@srec.ac.in	35 min	2:07 PM	2:42 PM
Vasanthakumar	Jaganathan	vasa*****@***.com	42 min	2:00 PM	2:42 PM
Dr Thyla Pr	- PSGCT	prt. ****@***.in	40 min	2:01 PM	2:42 PM
Senthil	Raja	sent*****@***.com	42 min	2:00 PM	2:42 PM
Prof. Kuppan Chetty	Ramanathan	kupp*****@***.edu	45 min	1:57 PM	2:42 PM
Sudhakar	Ramasamy	sudhakar.ramasamy@srec.ac.in	53 min	1:49 PM	2:42 PM
HoD	Robotics & Automation	hod-ra@srec.ac.in	49 min	1:53 PM	2:42 PM

Note: All the faculty members joined in the common login @sudhakar.ramasamy@srec.ac.in (Host)

Detailed Attendance Sheet:

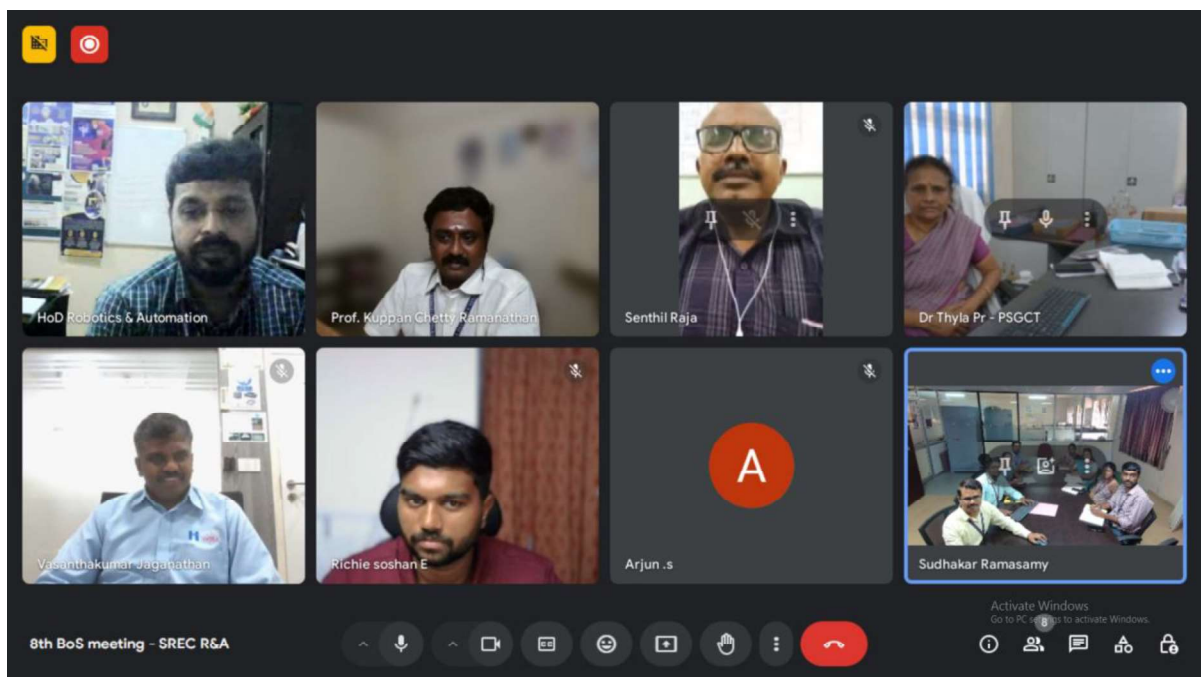
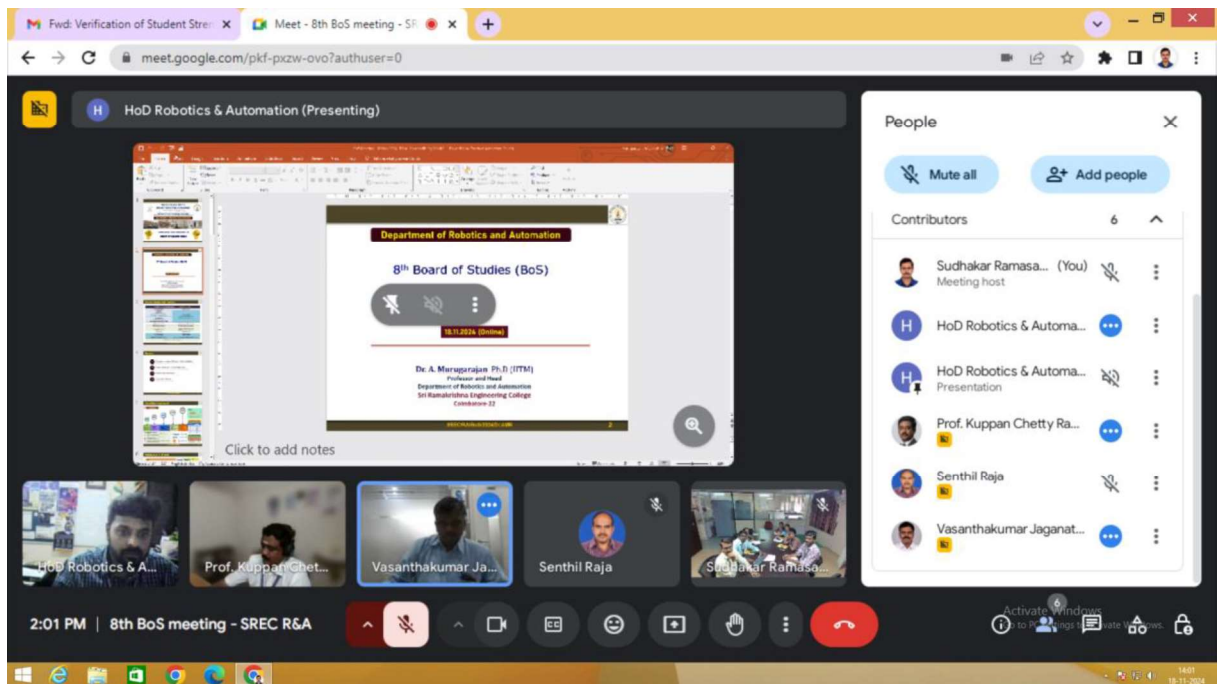
Name of the Member	Designation	Signature
Dr.A.Murugarajan	Chairman	
Dr.P.R. Thyla	University Nominee	Present
Dr.R.Senthilraja	University Nominee	Present
Dr.Shanthakumar Mohan	Expert from IIT	Absent
Dr Kuppan Chetty Ramanathan	Subject Expert from Other University	Present
Mr. Vasanthkumar	Industry Expert	Present
Mr. Arjun Sridhar	Industry Expert	Present
Mr.Richie Soshan	Meritorious Alumni	Present
Dr.R.Sudhakar	Department Coordinator (RA)	
Dr.A.Kishore kumar	Faculty Member	
Dr.M.S.Sureshkumar	Faculty Member	Absent
Mr.S.Sarveswaran	Faculty Member	Absent
Mrs.N.Dheerthi	Faculty Member	
Mrs.G.Hemalatha	Faculty Member	
Mrs. J.M. Priyadharsheni	Faculty Member	
Mr. A.Peniel Winifred Raj	Faculty Member	
Mr.S.Krishnakumar	Faculty Member	
Mrs.K.Prashanthini	Faculty Member	
Ms.K.Roobini	Faculty Member	Absent



CHAIRPERSON
BOARD OF STUDIES

Department of Robotics and Automation

Google Meet Screenshots during the Google Meet





Draft Minutes of Meeting-8th BoS- Robotics and Automation

Dr Thyla Pr - PSGCT <pri.mech@psgtech.ac.in>

Mon, Nov 25, 2024 at 3:26 PM

To: HoD Robotics & Automation <hod-ra@srec.ac.in>

Cc: Senthil Raja <senthilrajairt@gmail.com>, anthakumar@iitpkd.ac.in, Kuppan chetty Ramanathan <rmkuppan@gmail.com>, arjun_s <arjun_s@craftsmanautomation.com>, vasanthakumar.j@hirotecindia.com, erichiesoshan@gmail.com, Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>

I approve the minutes of the BoD meeting

With regards,

Dr P R Thyla
Professor and Head
Department of Mechanical Engineering
PSG College of Technology
Coimbatore - 641004, Tamilnadu, India.

[Quoted text hidden]



Draft Minutes of Meeting-8th BoS- Robotics and Automation

Kuppan chetty Ramanathan <rmkuppan@gmail.com>

Mon, Nov 25, 2024 at 3:43 PM

To: HoD Robotics & Automation <hod-ra@srec.ac.in>

Cc: prt.mech@psgtech.ac.in, Senthil Raja <senthilrajairtt@gmail.com>, anthakumar@iitpkd.ac.in, arjun_s<arjun_s@craftsmanautomation.com>, vasanthakumar.j@hirotecindia.com, erichiesoshan@gmail.com, Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>

Dear Sir,

I also approve the minutes.

Regards

[Quoted text hidden]

--

With Best Regards

Dr. RM. Kuppan Chetty,

M.Tech., PHD (IITM), MIE.,MIET., C.Eng.,

Professor, School of Mechanical Engineering (SoME)

SASTRA Deemed to be University

Thanjavur. Tamil Nadu, 613 401.

Ph: +91-4362 350001-20 / Ext. 2120.

M: +91-9444030759

Email: kuppanchetty@mech.sastra.edu; rmkuppan@gmail.com

"அறிவற்றங் காக்குங் கருவி செறுவார்க்கும்

உள்ளழிக்க லாகா அரண்"

"Wisdom is a weapon to ward off destruction; it is an inner fortress which enemies cannot destroy"

"Wisdom is a weapon to ward off destruction; it is an inner fortress which enemies cannot destroy"



Draft Minutes of Meeting-8th BoS- Robotics and Automation

Senthil Raja <senthilrajairtt@gmail.com>

Mon, Nov 25, 2024 at 5:40 PM

To: Kuppan chetty Ramanathan <rmkuppan@gmail.com>

Cc: HoD Robotics & Automation <hod-ra@srec.ac.in>, prt.mech@psgtech.ac.in, anthakumar@iitpkd.ac.in, arjun_s<arjun_s@craftsmanautomation.com>, vasanthakumar.j@hirotecindia.com, erichiesoshan@gmail.com, Sudhakar Ramasamy <sudhakar.ramasamy@srec.ac.in>

Dear Sir,

I approve minutes of 8th BoS meeting.

On Mon, 25 Nov, 2024, 3:43 pm Kuppan chetty Ramanathan, <rmkuppan@gmail.com> wrote:

Dear Sir,

I also approve the minutes.

Regards

On Thu, 21 Nov 2024 at 14:46, HoD Robotics & Automation <hod-ra@srec.ac.in> wrote:

Dear Sir/ Madam,

I am attaching the draft minutes of the 8th BoS meeting of the Robotics and Automation program, conducted on 18/11/2024. Please approve the same. If any please let me know

Thanks & Regards**Dr.A.Murugarajan Ph.D (IITM)**

Professor and Head

Department of Robotics and Automation

Sri Ramakrishna Engineering College

Vattamalaipalayam, Coimbatore-641022

Phone: +91 422 2460088, 2461588

Mobile: 9843750046

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With Best Regards

Dr. RM. Kuppan Chetty,

M.Tech., PHD (IITM), MIE.,MIET., C.Eng.,

Professor, School of Mechanical Engineering (SoME)

SASTRA Deemed to be University

Thanjavur, Tamil Nadu, 613 401.

Ph: +91-4362 350001-20 / Ext. 2120.

M: +91-9444030759

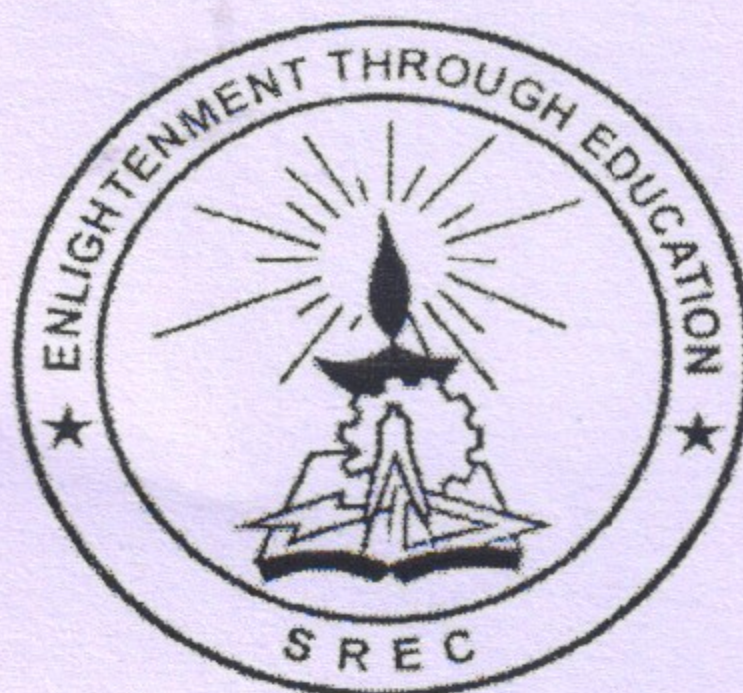
Email: kuppanchetty@mech.sastra.edu; rmkuppan@gmail.com

"அறிவற்றங் காக்குங் கருவி செறுவார்க்கும்

உள்ளழிக்க லாகா அரண்"

"Wisdom is a weapon to ward off destruction; it is an inner fortress which enemies cannot destroy"

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SRI RAMAKRISHNA ENGINEERING COLLEGE, COIMBATORE – 22

[Educational Service : SNR Sons Charitable Trust]

[Autonomous Institution, Reaccredited by NAAC with 'A+' Grade]

[Approved by AICTE and Permanently Affiliated to Anna University, Chennai]

[ISO 9001:2015 Certified and all eligible programmes Accredited by NBA]

MINUTES OF THE SEVENTH BOARD OF STUDIES MEETING FOR THE UG ROBOTICS AND AUTOMATION PROGRAMME HELD ON 06.04.2024 AT 9.30 AM IN AUDITORIUM BOARD ROOM, SREC.

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.M.Sreekumar Professor Head - Centre for AI, IoT, and Robotics Dean - Faculty Affairs Faculty of Mechanical Engineering, IIITDM Kancheepuram	University Nominee
3	Mr. Arjun Sridhar Head – Technology Development Division, Craftsman Automation, Coimbatore	Industry Expert
4	Mr. Yerra Komala Kalyanraman Team Lead, Wipro -Research Bangaluru	Industry Expert
5	Dr.Shanthakumar Mohan Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Expert from IIT
6	Dr. S.Denis Ashok Professor, School of Mechanical Engineering Department of Design and Automation, VIT University, Vellore	Subject Expert from Other University

7	Mr. Harwinder Singh Principal Engineer Rockwell Automation, Coimbatore	Meritorious Alumni (UG-EEE)
8	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
9	Dr.A.Kishore kumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
10	Dr.M.S.Sureshkumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
11	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mrs.N.Dheerthi, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
13	Mrs.G.Hemalatha, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
14	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
15	Mr. A.Peniel Winifred Raj, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Mr.S.Krishnakumar, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
17	Mrs.K.Prashanthini, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member

The meeting was presided over by Dr. A. Murugarajan, Chairperson of the Board of Studies, who welcomed all members to the 7th BoS meeting. After a brief introduction to the various committee members in the Board of Studies. He presented an overview the new professional electives offered under Revised Regulations 2020 for B.E. Robotics and Automation and new professional electives and NPTEL courses offered under Regulations 2022 for M.Tech Robotics and Artificial Intelligence. Further, the agenda items listed were taken up for discussion and the following resolutions were passed.

ITEM No.1: Discussion on Vision, Mission of the Department / Institution, PEOs & PSOs

- Dr. Shanthakumar Mohan suggested to have the word “robotic” systems in the Vision Mission Statement instead of robotics systems
- Dr. Sreekumar suggested to add “startup” in the PSOs newly proposed for the B.E. Robotics and Automation Programme.

ITEM No.2: Regulations, Curriculum and Syllabus for Electives Courses - New proposed courses for UG/PG Programme**Professional Elective courses**

Under the Revised Regulations 2020 for the B.E. Robotics and Automation program, the following Professional Elective courses will be added to the existing offerings provided by the department.

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	20RA2E61	Neural Networks and Fuzzy Systems	3	0	0	3	40	60	100
2.	20RA2E62	Robotics And Automation in Food Industry	3	0	0	3	40	60	100
3.	20RA2E63	Cloud Robotics	3	0	0	3	40	60	100

S.No	Course Code and Title	Suggestion Given	Action Taken
1	20RA2E61 Neural Networks and Fuzzy Systems	• Dr. Sreekumar suggested to check the latest versions of the text books and reference books. • New Books should be added in the syllabus irrespective of whether available in the library.	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised.
2	20RA2E63 Cloud Robotics	Dr. Sreekumar asked about significance of edge analytics topic included in the cloud robotics syllabus. Dr. Shanthakumar Mohan suggested to include case studies so that the students can demonstrate the integration of robot in cloud platform.	

Professional Elective courses

Under the Regulations 2022 for the M. Tech Robotics and Artificial Intelligence program, the following Professional Elective courses will be added to the existing offerings provided by the department.

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	22RA1E19	Robot Sensing and Vision	3	0	0	3	40	60	100
2.	22RA1E20	IOT and Edge Computing	3	0	0	3	40	60	100

S.No	Course Code and Title	Suggestion Given	Action Taken
1	22RA1E19 Robot Sensing and Vision	- Dr. Sreekumar suggested to compare the course contents with the professional core course offered in the first semester "Sensors in Automation" - Vision Sensors and Survey Books can be included in the syllabus	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised.
2	22RA1E20 IOT and Edge Computing	Dr. Sreekumar suggested to have collaborations with IIT and NIT so that students can opt for courses offered by eminent professors. Dr. Shanthakumar Mohan suggested to include case studies so that the students can demonstrate the data storage in cloud and local servers	

ITEM No.3: Proposed NPTEL Courses for M. Tech Programme

Under the Regulations 2022 for the M. Tech Robotics and Artificial Intelligence program will incorporate the following NPTEL courses as additional options for credit transfer.

S.No	NPTEL Code	Course Name	No of Weeks	No of Credits	Equivalent SREC Course
1	noc21_ge20	Fundamentals Of Artificial Intelligence	12	3	-
2	noc22_cs83	Applied Accelerated Artificial Intelligence	12	3	-
3	noc23_cs09	Artificial Intelligence: Knowledge Representation and Reasoning	12	3	-

ITEM No.4: Quality improvement activities in the Department, Research and Consultancy activities:

- Dr. Sreekumar enquired about the improvement in internship count from last year to this year
- Dr. Sreekumar enquired about how many core companies added in the internship and placement activities.
- Dr. Sreekumar and Dr. Shanthakumar Mohan enquired about the involvement of students in the consultancy activities.

Suggestions/Comments from External Expert Members and University Nominee to be recorded:

- Dr. Sreekumar suggested to add the road map or growth of the department from 2019 to 2024 in the presentation.
- The Road map should consist of No of Faculty with specialization, Facilities added (infrastructure developed related to laboratory experiments, consultancy and research), Student Intake Quality, Industry and Consultancy Projects undertaken, Placement and Internship.
- Dr. Sreekumar suggested to conduct school programs or robot competition specifically in Coimbatore zone.
- Dr. Sreekumar suggested to apply for funding support under corporate social responsibility scheme for conduct of such programmes.
- Dr. Sreekumar suggested to conduct training for school teachers in science domain to create awareness on engineering and robotic applications.
- New Editions of text books and reference books should be provided for all the proposed courses.

UG Programmes:

RR2020

- It is resolved that Revised Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2021 & onwards.
- It is resolved that the syllabi for the following new Professional Elective courses under (Revised) Regulations 2020 be approved and passed.
 - **20RA2E61 NEURAL NETWORKS AND FUZZY SYSTEMS**
 - **20RA2E62 ROBOTICS AND AUTOMATION IN FOOD INDUSTRY**
 - **20RA2E63 CLOUD ROBOTICS**
- It is resolved that the syllabi for the following new Open Elective courses under (Revised) Regulations 2020 be approved and passed. - **NIL**
- It is resolved that the following new one credit courses will be included under (Revised) Regulations 2020 for B.E. Robotics and Automation degree programme. - (if applicable). - **NIL**
- It is resolved that the following NPTEL courses are approved for credit transfer during April/May 2024. - (if applicable). - **NIL**
- It is resolved that the Result Analysis for the Academic Year 2023 – 2024 (Semesters VII / V/ III) are approved and passed.

S. No	Description	Batch: 2020 -2024	Batch: 2021- 2025	Batch: 2022-2026
1	Semester	VII	V	III
2	Year	IV	III	II
3	No. of students registered in all the subjects	59	64	64
4	No. of students appeared in all the subjects	59	61	62
5	No. of students passed in all the subjects	42	41	33
6	Over all percentage	71.19	67.21	53.23

- It is resolved that the new courses and its syllabi be approved for the Honors Specialization / minor in B.E. Robotics and Automation degree programme – **if any - NIL**

S.No	Course Code	Course Title	Credits	Mode of Delivery	Offered by
1	20XXXXXX			Class / NPTEL	SREC / Premier Institution / Industry

- It is resolved that the following specialization/minor courses are offered during the even semester of Academic Year 2023 – 2024 and the following eligible students be approved for the Honors Specialization / minor in B.E. Robotics and Automation degree programme – **if any - NIL**
- It is resolved that the following Mandatory courses be approved for the student in B.E. Robotics and Automation degree programme

Batch: 2020 - 2024

S.No	Mandatory Course	Course Code	No. of Students Completed
1.	Personality & character development	-	60
2.	Career development and Placement division –Employability and enhancement Course	20MC291	59

Batch: 2021 - 2025

S.No	Mandatory Course	Course Code	No. of Students Completed
1.	Technical certification	20MC275	64
2.	Career development and Placement division –Employability and enhancement Course	20MC291	64

- It is resolved that the following students had completed 4/6 weeks of internship/inplant training be approved for the student in B.E. Robotics and Automation degree programme

Batch: 2020 - 2024

S.No	Industry	No. of Students Completed
1.	HTIC, IIT Madras	2
2.	Pinnacle Systems, Tirupur	1
3.	CodeBind Technologies, Coimbatore	4
4.	Maxbyte Technologies, Coimbatore	2
5.	Just Robotics, Bangalore	1
6.	Salzer Electronics Limited, Coimbatore	7
7.	Vtronics Automation, Coimbatore	1
8.	Sinclair Applications, Hosur	1
9.	Dotworld Technology, Coimbatore	1
10.	Techvolt Software Pvt Limited, Coimbatore	2
11.	Roots Industries India Limited, Coimbatore	1
12.	Robotica FA Solutions, Coimbatore	2
13.	Gateway Software Solutions, Coimbatore	9
14.	CINEMAVENS A Visual, Coimbatore	1
15.	Mechmet Engineers, Coimbatore	3
16.	Appin Technology, Coimbatore	3
17.	Bosch Global Technologies, Bangalore	1
18.	Lega Byte Innovation Private Limited, West Bengal	1
19.	Quart Ciphers, Ramanathapuram	2
20.	Greendzine Technologies, Bangalore	1
21.	Mahindra University, Hyderabad	1
22.	Yoi Robotics Laboratory, Coimbatore	2
23.	AMTDC, IIT Madras	5
24.	Vishal Precision Products Private Limited, Coimbatore	1
25.	Medsby Healthcare & Engineering Solutions, Coimbatore	1
26.	Thepush Robotics, Coimbatore	2
27.	Nunnari Labs Pvt. Ltd, Coimbatore	1

Batch: 2021 - 2025

S.No	Industry	No. of Students Completed
1.	Salzer Electronics Limited, Coimbatore	5
2.	Craftsman Automation, Coimbatore	3
3.	Falcon Toolings, Coimbatore	5
4.	Yoi Robotics Laboratory, Coimbatore	7
5.	Hirotec India, Coimbatore	2
6.	Sri ADS Poly Injections, Chennai	1
7.	ATC Limited, Hosur	1
8.	ROOTS Industries, Coimbatore	1
9.	Pricol Engineering, Coimbatore	1

- It is resolved that the curriculum for the **B.E. (Mech/EEE/ECE) programme** for working professionals as communicated by AICTE through AICTE/P&AP/APH/2023-24/01 dated 24.08.2023 may be started with approval from Anna University, Chennai. **(for the Programmes Applicable) – Not Applicable**

Humanities and Social Science Courses (HSC)			
S.No	Course Code	Course Title	Credits (LTPC)
1	20XXXXXX		
2			
Basic Science Courses (BSC)			
Engineering Science Courses (ESC)			
Professional Core Courses (PCC)			
Open Elective Courses (OEC)			
Professional Elective Courses (PEC)			
Employment Enhancement Courses (EEC)			

- Readmitted / transferred student details (if applicable) – to be included. - **NIL**

- Credit balance for the Readmitted / transferred students (if applicable) – to be included. - **Not Applicable**

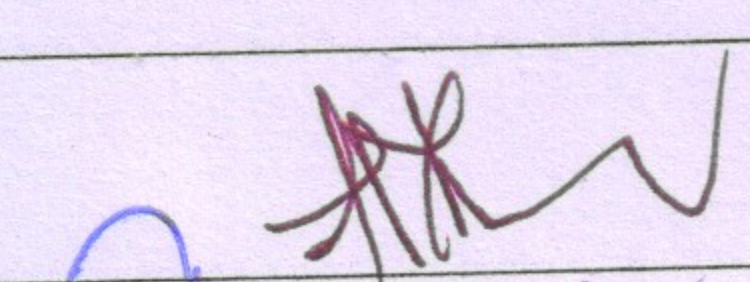
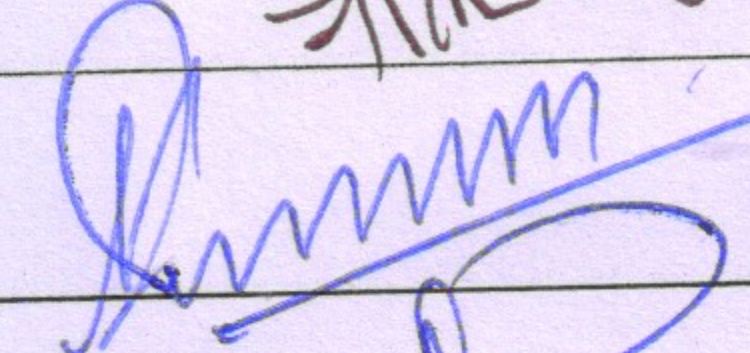
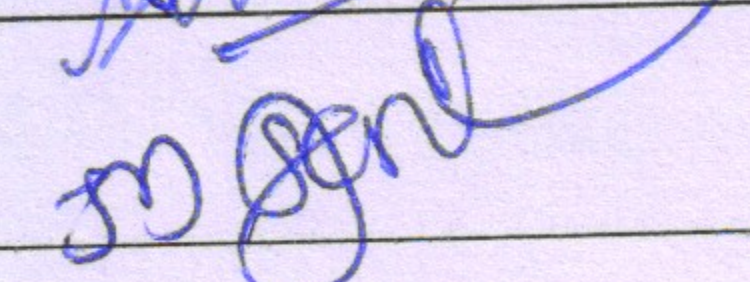
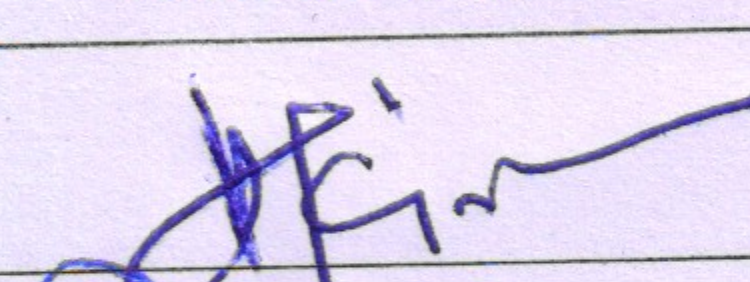
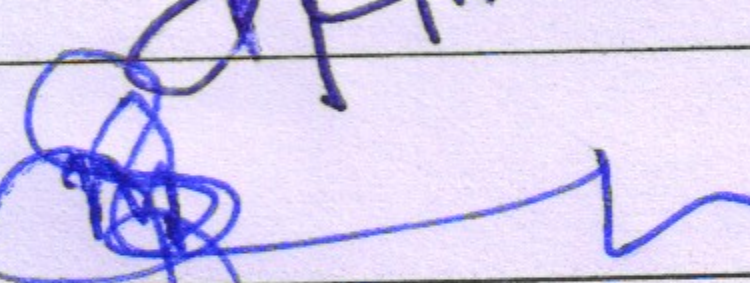
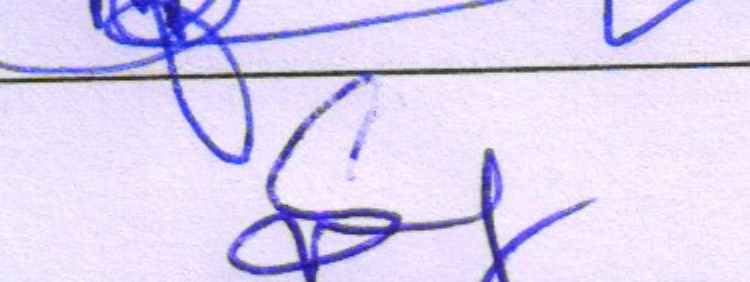
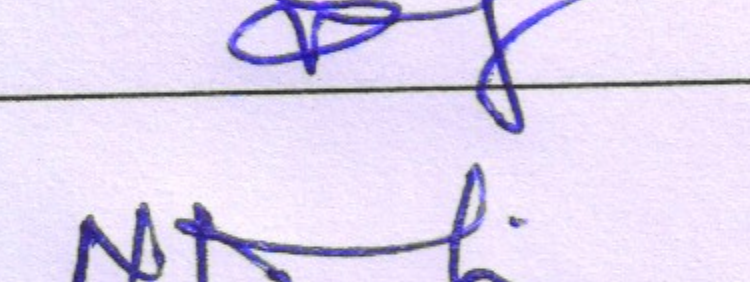
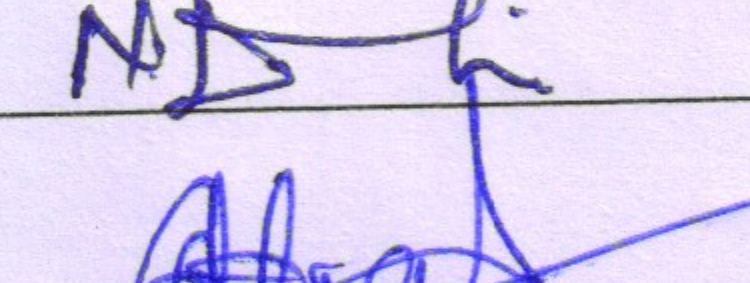
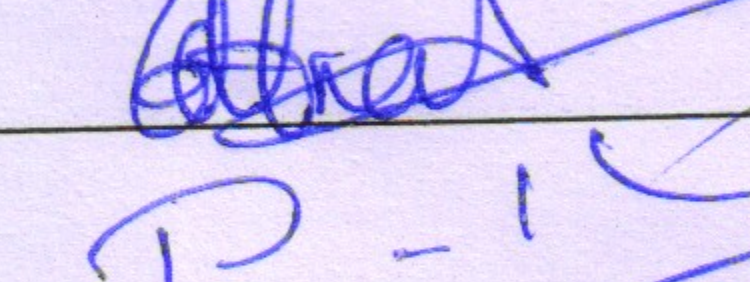
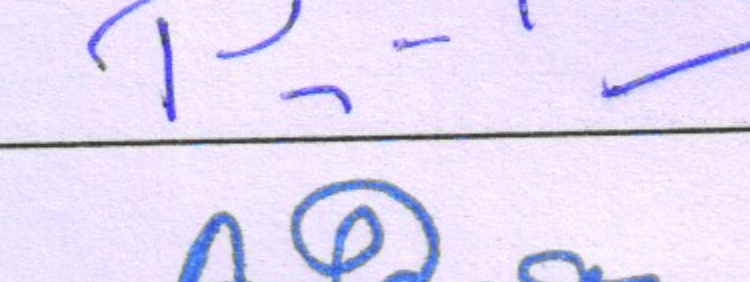
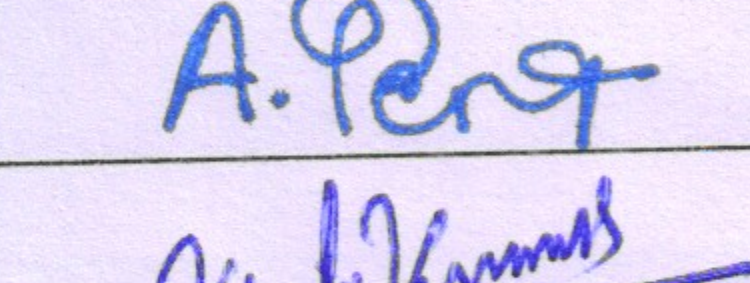
M.E./M.Tech Programmes:

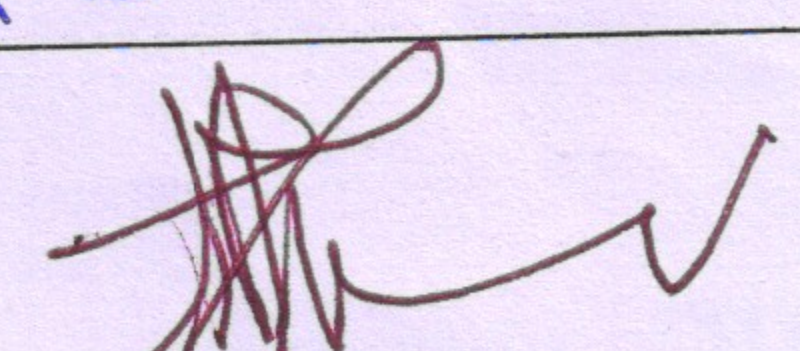
- It is resolved that the PG Regulations 2022 will be followed for the students admitted from academic year 2022 and onwards.
- It is resolved that the closure of M.E. () programme be approved and passed. **(If applicable) – Not Applicable**
- It is resolved that the syllabi for the following new Professional Elective courses under Regulations 2022 for M.E./M.Tech Robotics and Artificial Intelligence programmes be approved and passed. **(If applicable)**
 - **22RA1E19 – ROBOT SENSING AND VISION**
 - **22RA1E20 – IoT and EDGE COMPUTING**
- It is resolved that the following NPTEL courses are approved for credit transfer during April / May 2024. - (if applicable).
 - 1. Fundamentals of Artificial Intelligence – 12 Weeks**
 - 2. Applied Accelerated Artificial Intelligence – 12 Weeks**
 - 3. Artificial Intelligence: Knowledge Representation and Reasoning – 12 Weeks**

MBA Programme:

- It is resolved that the Revised Regulations 2020 will be followed for the students admitted from academic year 2021 and onwards.
- It is resolved that the new electives be approved under Revised Regulations 2020 for MBA programmes - if applicable
- It is resolved that the following NPTEL/MOOCs courses are approved for credit transfer - (if applicable).
 - 1.
 - 2.

Attendance Sheet:

Name of the Member	Designation	Signature
Dr.A.Murugarajan	Chairperson	
Dr.M.Sreekumar	University Nominee	 06/04/24
Dr.Shanthakumar Mohan	Expert from IIT	
Dr. S.Denis Ashok	Subject Expert from Other University	ABSENT
Mr. Yerra Komala Kalyanraman	Industry Expert	ABSENT
Mr. Arjun Sridhar	Industry Expert	ABSENT
Mr. Harwinder Singh	Meritorious Alumni (UG-EEE)	ABSENT
Dr.R.Sudhakar	Department Coordinator (RA)	R. Sudhakar
Dr.A.Kishore kumar	Faculty Member	
Dr.M.S.Sureshkumar	Faculty Member	
Mr.S.Sarveswaran	Faculty Member	
Mrs.N.Dheerthi	Faculty Member	
Mrs.G.Hemalatha	Faculty Member	
Mrs. J.M. Priyadharsheni	Faculty Member	
Mr. A.Peniel Winifred Raj	Faculty Member	A. Peniel
Mr.S.Krishnakumar	Faculty Member	
Mrs.K.Prashanthini	Faculty Member	


CHAIRPERSON
BOARD OF STUDIES
Department of Robotics and Automation



SRI RAMAKRISHNA ENGINEERING COLLEGE, COIMBATORE – 22

[Educational Service: SNR Sons Charitable Trust]

[Autonomous Institution, Reaccredited by NAAC with 'A+' Grade]

[Approved by AICTE and Permanently Affiliated to Anna University, Chennai]

[ISO 9001:2015 Certified and all eligible programmes Accredited by NBA]

**MINUTES OF THE SIXTH BOARD OF STUDIES MEETING FOR THE UG
ROBOTICS AND AUTOMATION PROGRAMME HELD ON 18.11.2023 AT 9.30
AM THROUGH VIRTUAL MODE IN GOOGLE MEET PLATFORM**

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.M.Sreekumar Head, Centre for AI, IoT, and Robotics Dean-Faculty Affairs Faculty of Mechanical Engineering, IIITDM Kancheepuram	University Nominee
3	Mr. Yerra Komala Kalyanraman Team Lead, Wipro -Research	Industry Expert
4	Dr.Shanthakumar Mohan Associate Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Expert from IIT
5	Dr. S.Denis Ashok Professor, School of Mechanical Engineering Department of Design and Automation, VIT University, Vellore	Subject Expert from Other University
6	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
7	Dr.A.Kishore kumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member

8	Dr.M.S.Sureshkumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
9	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
10	Mrs.N.Dheerthi, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
11	Mrs.G.Hemalatha, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
13	Mr. A.Peniel Winifred Raj, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
14	Mr.S.Krishnakumar, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
15	Mrs.S.Prashanthini, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member

The meeting was presided over by Dr. A. Murugarajan, Chairperson of the Board of Studies, who welcomed all members to the 6th BoS meeting. After a brief introduction to the various committee members in the Board of Studies. He presented an overview the new professional electives, open electives, soft core courses, Academic/Non-Academic/Value Added courses and NPTEL courses offered under Revised Regulations 2020 for B.E. Robotics and Automation. Further, the agenda items listed were taken up for discussion and the following resolutions were passed.

ITEM No.1: Professional Elective courses

Under the Revised Regulations 2020 for the B.E. Robotics and Automation program, the following Professional Elective courses will be added to the existing offerings provided by the department.

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	20RA2E45	Fundamental Algorithms	3	0	0	3	40	60	100
2.	20RA2E46	Digital Twin & Industry 5.0	3	0	0	3	40	60	100
3.	20RA2E47	Underwater Robotics	3	0	0	3	40	60	100
4.	20RA2E48	Agricultural Robotics and Automation	3	0	0	3	40	60	100
5.	20RA2E49	Project Management	3	0	0	3	40	60	100
6.	20RA2E50	Process Planning & Cost Estimation	3	0	0	3	40	60	100

The following suggestions are provided by the BoS Members for Professional Elective courses:

S.No	Course Code and Title	Suggestion Given	Action Taken
1	20RA2E45 Fundamental Algorithms	- Mr. Komal sought clarification on whether the course would be theory-focused or practical-oriented, considering the plenty of coding platforms such as Lead Code, HackerRank, and CodeChef. - He recommended incorporating practical problem-solving aligned with placement preparation and emphasized the importance of data structures in various sectors, including IT and robotics. - He viewed as a positive initiative for introducing the course to the students.	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised.
2	20RA2E46 Digital Twin & Industry 5.0	- Dr. Sreekumar recommended incorporating a review of Industry 4.0, emphasizing the ongoing transformation and suggesting a logical progression by connecting Industry 4.0 with Industry 5.0. - He proposed introducing Industry 4.0 concepts first and subsequently integrating Industry 5.0, providing justification for the necessity of Industry 5.0, discussing developments between Industry 4.0 and 5.0, and outlining the vision of Industry 5.0 in the course content. - Mr. Komal inquired about the presence of a laboratory associated with Industry 5.0, expressing a preference for practical application over a purely theoretical approach. He suggested infusing the course with AR/VR content to enable students to engage in case studies, such as exploring induction motors through AR/VR with Microsoft HoloLens. - Dr. S. Denis Ashok proposed the addition of cybersecurity topics and addressing security concerns in the course.	This course is introduced to create some awareness about Industry 5.0 among the students. Case Studies will be included suitably in the course. Good reference books also will be suitably included
3	20RA2E47 Underwater Robotics	- Dr. Sreekumar raised concerns about the relevance of the course content to underwater robots, noting a mismatch between the first module (Fundamentals of Mobile Robot) and the second module (Kinematics of Underwater Vehicle). - He suggested reordering the modules to introduce the fundamentals and overview of underwater vehicles first. Additionally, he recommended incorporating the topic of actuators before sensors in the navigation system module.	ROS and Gazebo software's are available to simulate underwater mobile robots.

		• Dr. Shanthakumar Mohan provide recommendations for enhancing the syllabus by including dynamics and hydrodynamics. He proposed integrating guidance on ocean control from either Fossen's "Guidance and Control of Ocean Vehicles" or Fossen's "Marine Control Systems." He suggested combining Robust Design and Motion Planning into one module, highlighting the differences between ground-based, aerial, and underwater robots. • Dr. Shanthakumar Mohan recommended modifying the navigation part, as SLAM navigation may not be suitable for underwater robots. Path planning, already covered in the autonomous mobile robot syllabus, should be removed. Control strategies and challenges specific to underwater robots should be included in the syllabus. • Meanwhile, Mr. Komal inquired about the availability of Gazebo simulation for visualizing underwater robots.	Additionally, one credit course on ROS I & II is given to the students. The books suggested for the underwater robots will be included in text books.
4	20RA2E48 Agricultural Robotics and Automation	• Dr. Sreekumar noted that the automation aspect appears incomplete, suggesting the inclusion of machines used for harvesting and plugging in the curriculum. He proposed adding a module covering topics such as harvesting machines, automated seeding, and farming machines. • Mr. Komal recommended incorporating a project work component in agricultural robots. The project could involve the use of sensors to monitor humidity and temperature, with the goal of creating a dashboard for visualization through IoT and Cloud technologies.	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised.
5	20RA2E49 Project Management	• Dr. Sreekumar inquired about the inclusion of project management software such as Primavera and MS Project in the syllabus. He recommended incorporating case studies utilizing these licensed software applications, emphasizing that it could enhance employment opportunities for the students.	The course is included to provide some management related papers which is useful for the students going for higher studies.
6	20RA2E50 Process Planning & Cost Estimation	All the members suggested to check the latest versions of the text books and reference books.	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised.

ITEM No.2: Open Elective courses

Under the Revised Regulations 2020 for the B.E. Robotics and Automation program, the following Open Elective courses will be added to the existing offerings provided by the department.

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	22RA2E57	Wheeled Mobile Robots	3	0	0	3	40	60	100

The following suggestions are provided by the BoS Members for Open Elective courses:

S.No	Course Code and Title	Suggestion Given	Action Taken
1	22RA2E57 Wheeled Mobile Robots	All the members suggested to check the latest versions of the text books and reference books.	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised.

ITEM No.3: Soft Core courses

Under the Revised Regulations 2020 for the B.E. Robotics and Automation program, the following Soft-Core courses will be added to the existing offerings provided by the department.

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	20RA222	Automation in Manufacturing	3	0	0	3	40	60	100
2.	20RA223	Motion Control Systems	3	0	0	3	40	60	100

Note: A Core course may be a Soft Core if there is a choice or an option for the candidate to choose a course from a pool of courses from the main discipline / subject of study or which supports the main discipline / subject. In contrast to the phrase Soft Core.

The following suggestions are provided by the BoS Members for the Soft-Core courses:

S.No	Course Code and Title	Suggestion Given	Action Taken
1	20RA222 Automation in Manufacturing	Dr. Sreekumar inquired about the implementation of automation technologies in manufacturing and emphasized the need to verify all the contents. He suggested incorporating topics such as layout-related automation, CNC and automated machines, transfer devices, communication devices, PLC, HMI, and SCADA pertaining to manufacturing automation.	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised.

2	20RA223 Motion Control Systems	- Dr. Sreekumar suggested to add motion control devices in module 1. - Dr. S. Denis Ashok proposed the inclusion of linear and rotary control actuators along with their mechanisms. Additionally, he recommended integrating applications and case studies relevant to motion control systems into the syllabus.	The mentioned suggestions are taken in to consideration, the course contents will be suitably revised
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ITEM No.4: NPTEL courses

Under the Revised Regulations of 2020, the B.E. Robotics and Automation program will incorporate the following NPTEL courses as additional options for credit transfer, supplementing the existing NPTEL courses.

S.No	NPTEL Code	Course Name	No of Weeks	No of Credits	Equivalent SREC Course
1	noc24-ee45	Sensors and Actuators	12	3	20RA2E10 Smart Sensors and Data Fusion
2	noc21_cs76	Deep learning	12	3	20RA2E30 – Deep Learning for Robotics
3	noc23_me71	Social Innovation in Industry 4.0	12	3	20RA2E51 Automation in Industry 4.0
4	noc24-ee46	Microprocessors and Microcontrollers	12	3	-

The following suggestions are provided by the BoS Members for the NPTEL courses:

S.No	Course Code and Title	Suggestion Given	Action Taken
1	noc24-ee45 Sensors and Actuators	Dr. Sreekumar enquired about any pre-requisite for the NPTEL courses.	Pre-requisite will be suitable included for the proposed courses.
2	noc21_cs76 Deep learning		
3	noc23_me71 Social Innovation in Industry 4.0		
4	noc24-ee46 Microprocessors and Microcontrollers		

ITEM No.5: Academic/Non-Academic courses/ Value Added Courses:

Under the Revised Regulations of 2020, the B.E. Robotics and Automation program will include the following Academic/Non-Academic/Value Added courses.

Academic/Non-Academic Courses		
S.No	Course Name	Duration
1	Entrepreneurship Essentials and IPR	30 Hours
2	AI for Humanity	30 Hours
Value Added Courses		
1	Virtual and Augmented Reality in Robotics	30 Hours

The following suggestions are provided by the BoS Members for the Academic/Non-Academic/Value Added courses:

S.No	Course Code and Title	Suggestion Given	Action Taken
1	Entrepreneurship Essentials and IPR	Dr. Sreekumar raised a question regarding the students' willingness to enroll in courses without credits. He suggested that offering credits, especially for a valuable topic like "AI for humanity," would incentivize students and emphasize the importance of taking the course in the institution level.	The AI for Humanity course will be presented to the academic council for approval, with a proposed credit allocation of 2 credits.
2	AI for Humanity		
3	Virtual and Augmented Reality in Robotics		

ITEM No.6: Credit transfer during April 2023 to Nov 2023:

S. No	Year	Total No of Students	No of Professional Elective Courses to withdraw	No of students eligible for credit transfer under Direct Self-study courses	No of students eligible for credit transfer under NPTEL Courses completed	No of students eligible for credit transfer under One Credit Courses (Eligibility criteria: Totally 4 one credit courses to be completed)
1	IV	33	1	-	-	33
2	III	1	3	1	1	1
3		24	2	24	-	24
4		2	1	2	-	1 mandatory
5		20	1	-	-	20

General Suggestions/Comments from External Expert Members and University Nominee to be recorded:

- New Editions of text books and reference books should be provided for all the proposed courses.

General Agenda:

UG Programmes:

R2020

- It is resolved that Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2020.
- It is resolved that Revised Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2021 & onwards.
- It is resolved that the syllabi for the following new Professional Elective courses under (Revised) Regulations 2020 be approved and passed.

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	20RA2E45	Fundamental Algorithms	3	0	0	3	40	60	100
2.	20RA2E46	Digital Twin & Industry 5.0	3	0	0	3	40	60	100
3.	20RA2E47	Underwater Robotics	3	0	0	3	40	60	100
4.	20RA2E48	Agricultural Robotics and Automation	3	0	0	3	40	60	100
5.	20RA2E49	Project Management	3	0	0	3	40	60	100
6.	20RA2E50	Process Planning & Cost Estimation	3	0	0	3	40	60	100

- It is resolved that the syllabi for the following new Open Elective courses under (Revised) Regulations 2020 be approved and passed.

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	22RA2E57	Wheeled Mobile Robots	3	0	0	3	40	60	100

- It is resolved that the following new one credit courses will be included under (Revised) Regulations 2020 for B.E. _____ programme. - (if applicable). – **Not Applicable**

- It is resolved that the following NPTEL courses are approved for credit transfer during Nov/Dec 2023. - (if applicable).

S.No	NPTEL Code	Course Name	No of Weeks	No of Credits	Equivalent SREC Course
1	noc24-ee45	Sensors and Actuators	12	3	20RA2E10 Smart Sensors and Data Fusion
2	noc21_cs76	Deep learning	12	3	20RA2E30 – Deep Learning for Robotics
3	noc23_me71	Social Innovation in Industry 4.0	12	3	20RA2E51 Automation in Industry 4.0
4	noc24-ee46	Microprocessors and Microcontrollers	12	3	-

- It is resolved that the Result Analysis for the Academic Year 2022 – 2023 (Semesters VIII / VI/ IV/II) are approved and passed.
- It is resolved that the following candidates who have registered for additional credits during Nov/Dec 2023 examination under the Specialization/Minor courses category Verticals shall be approved according to the communication from Anna University, Chennai via Letter No. 5749/AU/CAC/Honours/2022 dated 16.11.2022. – **Not Applicable**

Specialization/Minor Course Details	Course Code and Title	Register No. of the Candidate	Name	CGPA

- It is resolved that the new courses and its syllabi be approved for the Honors Specialization / minor in B.E. _____ degree programme – **if any – Not Applicable**

S.No	Course Code	Course Title	Credits	Mode of Delivery	Offered by
1	20XXXXXX			Class / NPTEL	SREC / Premier Institution / Industry

- It is resolved that the **B.E. (Mech/EEE/ECE) programme** for working professionals as communicated by AICTE through AICTE/P&AP/APH/2023-24/01 dated 24.08.2023 may be started with approval from Anna University, Chennai. **(for the Programmes Applicable)**

- Readmitted / transferred student details (if applicable) – to be included. – Not applicable
- Credit balance for the Readmitted / transferred students (if applicable) – to be included. – Not Applicable

M.E./M.Tech Programmes:

- It is resolved that the PG Regulations 2022 will be followed for the students admitted from academic year 2022 and onwards.
- It is resolved that the M.E (XXXX) programme from the Academic Year 2024-2025 onwards be approved. **(If applicable) – Not Applicable**
- It is resolved that the curriculum structure for the M.E./M.Tech programme as recommended by the 17th Academic Council be approved. – **Not Applicable**

S.No	Category	Credits
1	Professional Core	
2	Professional Elective	
3	XXX	

- It is resolved that the syllabi for the following new Professional Elective courses under Regulations 2022 for M.E./M.Tech programmes be approved and passed. **(If applicable) – Not Applicable**
 - 20XX1EXX - XXXXX
- It is resolved that the syllabi for the following new Open Elective courses under (Revised) Regulations 2020 be approved and passed. **(If applicable) – Not Applicable**
 - 20XX1EXX - XXXXX
- It is resolved that the following NPTEL courses are approved for credit transfer during Nov/Dec 2023. - (if applicable). – **Not Applicable**

MBA Programme:

- It is resolved that the Revised Regulations 2020 will be followed for the students admitted from academic year 2021 and onwards.
- It is resolved that the new electives be approved under Revised Regulations 2020 for MBA programmes - if applicable – **Not Applicable.**
- It is resolved that the following NPTEL/MOOCs courses are approved for credit transfer - (if applicable). - – **Not Applicable.**

Sixth Board of Studies Meeting – November 2023

S.No	Name of the Member	Designation	Online Attendance
1.	Dr.A.Murugarajan	Chairperson	Present
2.	Dr.M.Sreekumar	University Nominee	Present
3.	Mr. Yerra Komala Kalyanraman	Industry Expert	Present
4.	Mr. Arjun Sridhar	Industry Expert	Absent
5.	Dr.Shanthakumar Mohan	Expert from IIT	Present
6.	Dr. S.Denis Ashok	Subject Expert from Other University	Present
7.	Mr. Harwinder Singh	Meritorious Alumni (UG-EEE)	Absent
8.	Dr.R.Sudhakar	Department Coordinator (RA)	Present
9.	Dr.A.Kishore kumar	Faculty Member (RA)	Present
10.	Dr.M.S.Sureshkumar	Faculty Member (RA)	Present
11.	Dr.K.Arunkumar	Faculty Member (RA)	Absent
12.	Mr.S.Sarveswaran	Faculty Member (RA)	Present
13.	Mrs.N.Dheerthi	Faculty Member (RA)	Present
14.	Mrs.G.Hemalatha	Faculty Member (RA)	Present
15.	Mrs. J.M. Priyadharsheni,	Faculty Member (RA)	Present
16.	Mr. A.Peniel Winifred Raj	Faculty Member (RA)	Present
17.	Mr.S.Krishnakumar	Faculty Member (RA)	Present
18.	Mrs.S.Prashanthini	Faculty Member (RA)	Present

Online Meeting Screenshot

Online Meeting Screenshot showing a Google Meet interface. The main screen displays a presentation slide titled "SRI RAMAKRISHNA ENGINEERING COLLEGE" and "Department of Robotics and Automation". The slide welcomes the members of the Board of Studies (BoS). The meeting is titled "HoD Robotics & Automation (Presenting)". The bottom status bar shows "9:34 AM | 6th BoS Meeting".

Participants visible in the sidebar include:

- Denis Ashok S
- HoD Robotics & Autom...
- Santhakumar Mohan
- Sreeksumar M
- Dr. Kishore Kumar A
- Dheerthi N
- komal kalyanraman
- 5 others
- Sudhakar Ramasamy

Online Meeting Screenshot showing a Google Meet interface. The main screen displays a presentation slide titled "Board of Studies (BoS) Members". The slide lists the members of the Sixth Board of Studies, dated 18.11.2023. The meeting is titled "HoD Robotics & Automation (Presenting)". The bottom status bar shows "9:36 AM | 6th BoS Meeting".

Participants visible in the sidebar include:

- HoD Robotics & Autom...
- Sreeksumar M
- komal kalyanraman
- Dr. Kishore Kumar A
- Denis Ashok S
- Santhakumar Mohan
- Dheerthi N
- 5 others
- Sudhakar Ramasamy

Board of Studies (BoS) Members

Sixth Board of Studies Members **Date: 18.11.2023**

University Nominee	Industry Expert
Dr. M. Sreeksumar Head, Centre for AI, IoT, and Robotics Dean, Faculty Affairs Faculty of Mechanical Engineering UITM Kanchepuram	Mr. Arjun Sridhar HOD of Technology Development Division M/s Craftsman Automation, Coimbatore
Subject Expert from IIT Dr. Shanthakumar Mohan Associate Professor Department of Mechanical Engineering IIT Palakkad	Subject Expert from Other University Dr. S. Denis Ashok Professor, School of Mechanical Engineering Department of Design and Automation VIT University, Vellore
Industry Expert Mr. Yerra Komala Kalyanraman Team Lead Wipro - Research	Industry Expert (Alumni) Mr. Harwinder Singh Principal Engineer Rockwell Automation, Coimbatore
Special Invitees	
Mr. Ganesh Chief officer - Industry Institute Interface / SREC	Dr. David Ratharaj Controller of Examinations, SREC
Faculty Members from ICA	
Dr. R. Sudhakar, Associate Professor	Mrs. M. Dheerthi, Assistant Professor (Sr. Gr)
Dr. A. Kishore Kumar, Assistant Professor (Sr. Gr)	Mrs. D. Hemalatha, Assistant Professor (Sr. Gr)
Dr. M. S. Sureshkumar, Assistant Professor (Sr. Gr)	Mrs. J. M. Priyadharshini, Assistant Professor
Dr. A. Arunkumar, Assistant Professor (Sr. Gr)	Mr. S. Krishnakumar, Assistant Professor
Mr. S. Saravanan, Assistant Professor (Sr. Gr)	Mrs. S. Prashanthini, Assistant Professor
Mr. Pinal Winfred Raj, Assistant Professor	

BREC/RA/BoS/Nov 2023/Dr. AMR



Online Meeting Attendance Sheet

6th BOS Meeting conducted on 18.11.2023

S.No	First name	Last name	Email	Duration	Time joined	Time exited
1	Dr Kishore Kumar	A	kishorekumar.a@srec.ac.in	56 min	9:27 AM	10:23 AM
2	Peniel Winifred Raj	A	penielwinifredraj@srec.ac.in	1 hr 3 min	9:21 AM	10:23 AM
3	Denis	Ashok S	deni*****@***.in	54 min	9:28 AM	10:23 AM
4	Hemalatha	G	hemalatha.g@srec.ac.in	48 min	9:52 AM	10:40 AM
5	komal	kalyanraman	koma*****@***.com	52 min	9:31 AM	10:23 AM
6	Sreekumar	M	***@***.in	57 min	9:25 AM	10:23 AM
7	Santhakumar	Mohan	sant*****@***.in	55 min	9:27 AM	10:23 AM
8	Dheerthi	N	dheerthi.n@srec.ac.in	51 min	9:32 AM	10:23 AM
9	Prashanthini K	RAE	prashanthini.k@srec.ac.in	56 min	9:28 AM	10:23 AM
10	Priyadharsheni J M	RAE	priyadharsheni.j.m@srec.ac.in	1 hr 3 min	9:29 AM	10:32 AM
11	Sudhakar	Ramasamy	sudhakar.ramasamy@srec.ac.in	1 hr 13 min	9:19 AM	10:32 AM
12	HoD	Robotics & Automation	hod-ra@srec.ac.in	1 hr 1 min	9:18 AM	10:23 AM
13	KRISHNAKUMAR	S	krishnakumar.s@srec.ac.in	54 min	9:24 AM	10:23 AM
14	Sarveswaran	S	sarveswaran.s@srec.ac.in	43 min	9:39 AM	10:23 AM
15	Suresh Kumar	Shanmugasundaram	sureshkumar.shanmugasundaram@srec.ac.in	52 min	9:31 AM	10:23 AM


CHAIRPERSON
BOARD OF STUDIES
 Department of Robotics and Automation
Board of Studies



SRI RAMAKRISHNA ENGINEERING COLLEGE, COIMBATORE – 22

[Educational Service: SNR Sons Charitable Trust]

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MINUTES OF THE FIFTH BOARD OF STUDIES MEETING FOR THE UG ROBOTICS AND AUTOMATION PROGRAMME HELD ON 16.02.2023 AT 3.00 PM THROUGH VIRTUAL MODE IN WEBEX PLATFORM

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.M.Sreekumar Professor, Department of Mechanical Engineering, IIITDM Kancheepuram Vandalur – Kelambakkam Road, Chennai – 600 127	University Nominee
3	Mr. Yerra Komala Kalyanraman Data Analytics Solutions - Center of Excellence Robert Bosch GmbH, Coimbatore - 641035	Industry Expert
4	Dr.Shanthakumar Mohan Associate Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Expert from IIT
5	Dr. S.Denis Ashok Professor, School of Mechanical Engineering Department of Design and Automation, VIT University, Vellore	Subject Expert from Other University
6	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
7	Dr.A.Kishore kumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member

8	Dr.M.S.Sureshkumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
9	Dr.K.Arunkumar, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
10	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
11	Mrs.S.Ranjitha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
12	Mrs.N.Dheerthi, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
13	Mrs.G.Hemalatha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
14	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
15	Mr. A.Peniel Winifred Raj, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Dr.M.Senthamil Selvi HOD – Information Technology / Artificial Intelligence and Data Science	Prof & Head / IT & AIDS

The meeting was presided over by Dr. A. Murugarajan, Chairperson of the Board of Studies, who welcomed all members to the 5th BoS meeting. Following a brief introduction to the various committee members in the Board of Studies. He presented an overview of the New PG Programme M.E/M.Tech Robotics and Artificial Intelligence offered under Regulations 2022, as well as the proposed curriculum and syllabi for the first two semesters and the specialization on Digital Manufacturing offered under B.E. Robotics and Automation. Further, the agenda items were discussed, and the following resolutions were passed.

ITEM No.1: New PG Programme M.E/M.Tech Robotics and Artificial Intelligence offered under Regulations 2022.

Dr. A. Murugarajan, Chairperson of the Board of Studies, proposed a new PG program, M.Tech Robotics and Artificial Intelligence, to begin in the academic year 2023-2024 under the Department. To meet the growing demand for skilled engineers with new emerging technologies, a new proposed master's degree program in Robotics and AI is intended to address these future topics. According to AICTE guidelines, a few Indian IITs (including IIT Guwahati) and private universities have begun to offer this program as an M.Tech. Robotics and AI. The Department of

Robotics and Automation would like to propose to the members the launch of a new PG program in M. Tech. Robotics and AI as an Industry-Collaborative program with an initial intake of six students. The proposed curriculum and syllabus are then presented to the members for approval.

Curriculum Structure: Distribution of Credits

S.NO.	SUBJECT AREA	CREDITS AS PER SEMESTER				CREDITS TOTAL
		I	II	III	IV	
1	Foundational Course	3	-	-	-	3
2	Professional Core	14	17	-	-	31
3	Professional Elective	-	3	12	-	15
4	Employment Enhancement Course	3	-	6	12	21
Total		20	20	18	12	70

SEMESTER I										
THEORY										
S. No.	CourseCode	Course Title	L	T	P	C	Category	CA	ES	Total
1	22MAXXX	Mathematical Foundations of Computational Intelligence	3	0	0	3	FC	40	60	100
2	22RAIXXX	Robotic System	3	0	0	3	PC	40	60	100
3	22RAIXXX	Industrial Internet of Things	3	0	0	3	PC	40	60	100
4	22RAIXXX	Data Analytics and Visualization	3	0	0	3	PC	40	60	100
5	22RAIXXX	Artificial Intelligence and Reasoning	3	0	0	3	PC	40	60	100
6	22RAIXXX	Research Methodology & IPR	3	0	0	3	EEC	40	60	100
PRACTICAL										
7	22RAIXXX	Robotic System Laboratory I	0	0	2	1	PC	60	40	100
8	22RAIXXX	AI Programming Lab I	0	0	2	1	PC	60	40	100
Total Credits						20				

SEMESTER II										
THEORY										
S. No.	Course Code	Course Title	L	T	P	C	Category	CA	ES	Total
1	22RAIXXX	Cyber Physical Systems	3	0	0	3	PC	40	60	100
2	22RAIXXX	Machine Learning for Intelligence	3	0	0	3	PC	40	60	100
3	22RAIXXX	Machine Vision and Deep learning	3	0	0	3	PC	40	60	100
4	22RAIXXX	Robot Simulation and Simultaneous mapping	3	0	0	3	PC	40	60	100
5	22RAIXXX	Big Data Analytics	3	0	0	3	PC	40	60	100
6	22RAIXXX	Professional Elective 1	3	0	0	3	PE	40	60	100
PRACTICAL										
7	22RAIXXX	Robotic System Laboratory II	0	0	2	1	PC	60	40	100
8	22RAIXXX	AI Programming Lab II	0	0	2	1	PC	60	40	100
Total Credits						20				
AUDIT COURSE										
9		English for Research Paper Writing								

SEMESTER III										
THEORY										
S. No.	Course Code	Course Title	L	T	P	C	Category	CA	ES	Total
1	22RAIXXX	Professional Elective 2	3	0	0	3	PE	40	60	100
2	22RAIXXX	Professional Elective 3	3	0	0	3	PE	40	60	100
3	22RAIXXX	Professional Elective 4	3	0	0	3	PE	40	60	100
4	22RAIXXX	Professional Elective 5	3	0	0	3	PE	40	60	100
PRACTICAL										
5	22RAIXXX	Project Dissertation – I / Industrial Project - I	0	0	12	6	EEC	60	40	100
Total Credits						18				

SEMESTER IV										
PROJECT WORK										
1	22RAIXXX	Project Dissertation – II / Industrial Project - II	0	0	24	12	EEC	60	40	100
Total Credits						12				

PROFESSIONAL ELECTIVES										
S.No.	Course Code	Course Title	L	T	P	C	Category	CA	ES	Total
1	22RAIXXX	Mobile and Micro robotics	3	0	0	3	PE	40	60	100
2	22RAIXXX	Robot Simulation and offline programming	3	0	0	3	PE	40	60	100
3	22RAIXXX	Robot Kinematics and Dynamics	3	0	0	3	PE	40	60	100
4	22RAIXXX	Autonomous Mobile Robots and Localization techniques	3	0	0	3	PE	40	60	100
5	22RAIXXX	Human Robot Interaction	3	0	0	3	PE	40	60	100
6	22RAIXXX	Bio Inspired Robot	3	0	0	3	PE	40	60	100
7	22RAIXXX	Gripping System	3	0	0	3	PE	40	60	100
8	22RAIXXX	Agent based Intelligent system	3	0	0	3	PE	40	60	100
9	22RAIXXX	Database Design and Implementation	3	0	0	3	PE	40	60	100
10	22RAIXXX	Neuromorphic Computing and Design	3	0	0	3	PE	40	60	100
11	22RAIXXX	Natural Language processing	3	0	0	3	PE	40	60	100
12	22RAIXXX	Fair and Explainable AI	3	0	0	3	PE	40	60	100
13	22RAIXXX	Path planning and navigation Algorithm	3	0	0	3	PE	40	60	100
14	22RAIXXX	Industrial Data Communication	3	0	0	3	PE	40	60	100
16	22RAIXXX	Sensors and Actuators	3	0	0	3	PE	40	60	100
17	22RAIXXX	Business Intelligence	3	0	0	3	PE	40	60	100
18	22RAIXXX	Data Mining and Warehousing	3	0	0	3	PE	40	60	100
19	22RAIXXX	Healthcare Analytics	3	0	0	3	PE	40	60	100

20	22RAIXXX	Python Robotics	3	0	0	3	PE	40	60	100
21	22RAIXXX	Probability and statistics using R	3	0	0	3	PE	40	60	100
22	22RAIXXX	Advanced Control Systems and Drives	3	0	0	3	PE	40	60	100
23	22RAIXXX	Motion control and Path planning	3	0	0	3	PE	40	60	100
24	22RAIXXX	Haptic Interface	3	0	0	3	PE	40	60	100
25	22RAIXXX	Drone System	3	0	0	3	PE	40	60	100

Total Credits to be earned for the Award of Degree: 70

FC – Foundational Course

PC – Professional Core

PE – Professional Elective

AC – Audit Course – Grade only

EEC - Employment Enhancement Course

Note : The Audit course will be awarded Grades which will not be included in the CGPA calculation. However, it is mandatory to complete the course successfully.

After presentation of the curriculum and detailed syllabus of M.E/M. Tech Robotics and Artificial Intelligence by Dr. A. Murugarajan, Chairperson, Board of Studies.

The following suggestions are provided by the BoS Members:

1. Dr. Sreekumar suggested the following:

- The Course name “Robotic System” can be renamed as “Robotic System Fundamentals”.
- The course contents in “Data analytics and Visualization” and “Big data analytics” need to be verified.
- The equal weightage should be given for robotics and artificial intelligence. Hence one course on computer / AI can be moved to professional elective in 2nd semester. One course on “Robot Modelling and Control” can be offered in 2nd semester.
- The Course name “Sensors and Actuators” offered in professional elective can be renamed as “Sensors and Actuators for Robots”.
- Professional Electives should be offered from 1st semester onwards.
- Text books / Reference Books should be checked for latest version and also for availability of eBooks.

2. Mr.Komal suggested the following:

- The course titled “Big data analytics” can be moved to professional electives.
- The course on “Embedded system” can be added in the professional core.

3. Dr. Shanthakumar Mohan suggested the following:

- Requested information on the overall number of credits for the M.E/M.Tech. programme and estimated that the total credits at the IITs would be between 57 and 63 and recommended to keep it within the range.

4. Dr. S.Denis Ashok Suggested the following :

- The curriculum is well balanced, however he pointed out that the students will be provided if robotics and artificial intelligence are given equal weightage in each semester.

General Suggestions by the members:

1. The course titled “Robot Kinematics and Dynamics”, and “Motion control and Path planning” can be moved to professional core.
2. The course contents in “Path planning and navigation Algorithm” and “Motion control and Path planning” need to be checked.
3. The list of professional electives offered various domain look good and well balanced to meet the requirements of industry.
4. Dr.M.Senthamil Selvi pointed out that in addition to Dr. Sreekumar's idea to include embedded courses in the curriculum suggested to include embedded AI.

Actions Taken:

The above mentioned suggested are taken in to consideration, the course title and course contents will be suitably revised.

- It is resolved that the curriculum and syllabi of M. Tech Robotics and Artificial Intelligence under Regulations 2022 be approved and passed.

ITEM No.2: Specialization / Minors - Digital Manufacturing for B.E Programme

List of proposed courses:

S. No.	Course Code	Course Title	L	T	P	C	CA	ES	TOTAL
1.	20RASXXX	Digital Manufacturing and Design	3	0	0	3	40	60	100
2.	20RASXXX	Design for Additive Manufacturing	3	0	0	3	40	60	100

3.	20RASXXX	Digital Twin and Industry 4.0	3	0	0	3	40	60	100
4.	20RASXXX	Mechanisms and Robotics	3	0	0	3	40	60	100
5.	20RASXXX	Big Data Analytics for Manufacturing	3	0	0	3	40	60	100
6.	20RASXXX	Cybersecurity in Manufacturing	3	0	0	3	40	60	100
7.	20RASXXX	Flexible Manufacturing Systems	3	0	0	3	40	60	100
8.	20RASXXX	AR/ VR	3	0	0	3	40	60	100
9.	20RASXXX	Embedded System Design	3	0	0	3	40	60	100
10.	20RASXXX	Robotics and Autonomous System	3	0	0	3	40	60	100
11.	20RASXXX	Digital Manufacturing Laboratory	0	0	2	1	60	40	100
12.	20RASXXX	Design and Simulation Laboratory	0	0	2	1	60	40	100

It is resolved that the courses offered under Digital manufacturing specialization be approved and passed.

ITEM No.3: Credit Transfer in February / March 2023

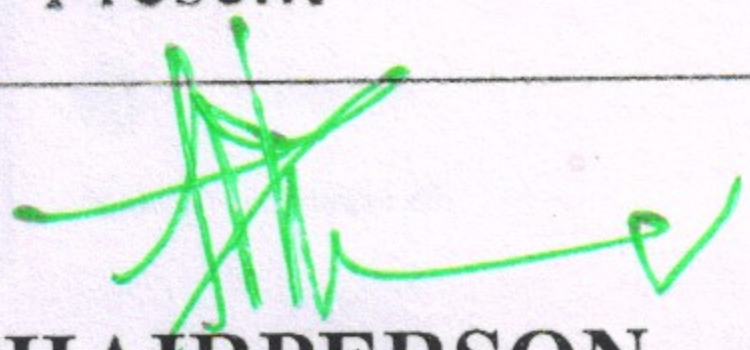
S.No	Year	Total No of Students	No of students eligible for credit transfer under Direct Self-study courses	No of students eligible for credit transfer under One Credit Courses (Eligibility criteria: Totally 4 one credit courses to be completed)
1	IV	17	3	14
2	III	9	-	9

General Suggestions/Comments from External Expert Members and University Nominee to be recorded.

- All the members appreciated the proposed curriculum and proposed courses under various categories.

Fifth Board of Studies Meeting – February 2023

Name of the Member	Designation	Online Attendance
Dr.A.Murugarajan	Chairperson	Present
Dr.M.Sreekumar	University Nominee	Present
Mr. Yerra Komala Kalyanraman	Industry Expert	Present
Mr. Arjun Sridhar	Industry Expert	Absent
Dr.Shanthakumar Mohan	Expert from IIT	Present
Dr. S.Denis Ashok	Subject Expert from Other University	Present
Mr. Harwinder Singh	Meritorious Alumni (UG-EEE)	Absent
Dr.R.Sudhakar	Department Coordinator (RA)	Present
Dr.A.Kishore kumar	Faculty Member (RA)	Present
Dr.M.S.Sureshkumar	Faculty Member (RA)	Present
Dr.K.Arunkumar	Faculty Member (RA)	Present
Mr.S.Sarveswaran	Faculty Member (RA)	Present
Mrs.S.Ranjitha	Faculty Member (RA)	Present
Mrs.N.Dheerthi	Faculty Member (RA)	Present
Mrs.G.Hemalatha	Faculty Member (RA)	Present
Mrs. J.M. Priyadharsheni,	Faculty Member (RA)	Present
Mr. A.Peniel Winifred Raj	Faculty Member (RA)	Present
Dr.M.Senthamil Selvi	HOD – IT/AIDS	Present



**CHAIRPERSON
BOARD OF STUDIES**

Department of Robotics and Automation

**Chairman
Board of Studies**

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Dr.M.Senthamil Selvi Sreekumar denisashok Dheerthi

Layout

Viewing Dr.A.Murugarajan, R&A, SREC...

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Department of Robotics and Automation

Welcomes the members of
Board of Studies (BoS)

SREC/RA/BoS/2023/Dr.AMR 1

Mute Start video Share

Participants (12)

Search

Dr. R. Sudhakar Host me

Dr.A.Murugarajan, R&A, SREC

denisashok

Dheerthi

Dr Arunkumar, K

Dr.A.Kishore Kumar

Dr.M.Senthamil Selvi

Priyadharsheni.J.N

S.Ranjitha

Santhakumar

Sarveswaran S

Sreekumar

Mute all Unmute all

Participants Chat

31°C Sunny 15:01 16-02-2023

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Santhakumar komal Dr.A.Murugarajan... (Co-host) denisashok Sreekumar

Layout

Viewing Dr.A.Murugarajan, R&A, SREC...

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PG Programme: M.Tech Robotics & AI

- New emerging technologies: Opportunities apart from traditional PG programs
- Students interested in pursuing a career in Artificial Intelligence and Robot applications
- Build a solid and dynamic career working in the robotics industry
- AI provides robots with adequate computer vision and motion control to better understand the environment and act accordingly.

Proposed as Industrial Collaborative Programme (Internships, Adjunct Faculty, Industry oriented Professional Elective course, Industrial Training)

Total no of student intake (proposed): 06

Eligibility/Admissions

B.E./B.Tech (All Branches)
Common Engineering Entrance Test for Admission Postgraduate (CEETA PG) for admission to ME/MTech programs by Anna University

MoUs with

Wipro PARI LTTS Robert Bosch Capgemini Craftsman Automation....

Institutes offering M.Tech Robotics & AI in India

IIT Guwahati College of Engineering, Pune SRM University, Chennai Sastra University, Trichy.

SREC/RA/BoS/2023/Dr.AMR 6

Unmute Start video Share

Participants (15)

Search

Dheerthi

Dr Arunkumar, K

Dr.A.Kishore Kumar

Dr.M.S. Sureshkumar MECH

Dr.M.Senthamil Selvi

HEMALATHA G/R&A

komal

Priyadharsheni.J.N

S.Ranjitha

Santhakumar

Sarveswaran S

Sreekumar

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Participants Chat

31°C Sunny 15:11 16-02-2023

Attendance sheet

▼ Participants (17)

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Dr. R. Sudhakar
Host, me

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Dr.A.Murugarajan, R&A, S...
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denisashok

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Dheerthi

✕



Dr Arunkumar. K

✕



Dr.A.Kishore Kumar

✕



Dr.M.S. Sureshkumar MECH

✕



Dr.M.Senthamil Selvi

✕



HEMALATHA G /R&A

✕



komal

✕



Peniel Winifred Raj A

✕



priyadharsheni



✕



Priyadharsheni.J.N

✕



S.Ranjitha

✕



Santhakumar

✕



Sarveswaran S

✕



Sreekumar

✕

**CHAIRPERSON
BOARD OF STUDIES**

Department of Robotics and Automation



SRI RAMAKRISHNA ENGINEERING COLLEGE, COIMBATORE – 22

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**MINUTES OF THE FOURTH BOARD OF STUDIES MEETING FOR THE UG
ROBOTICS AND AUTOMATION PROGRAMME HELD ON 08.12.2022 AT 2.30
PM THROUGH VIRTUAL MODE IN WEBEX PLATFORM**

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.M.Sreekumar Professor, Department of Mechanical Engineering, IIITDM Kancheepuram Vandalur – Kelambakkam Road, Chennai – 600 127	University Nominee
3	Mr. Yerra Komala Kalyanraman Data Analytics Solutions - Center of Excellence Robert Bosch GmbH, Coimbatore - 641035	Industry Expert
4	Dr.Shanthakumar Mohan Associate Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Expert from IIT
5	Dr. S.Denis Ashok Professor, School of Mechanical Engineering Department of Design and Automation, VIT University, Vellore	Subject Expert from Other University
6	Mr. Harwinder Singh Principal Engineer Rockwell Automation, Coimbatore	Meritorious Alumni (UG-EEE)

7	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
8	Dr.A.Kishore kumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
9	Dr.M.S.Sureshkumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
10	Dr.K.Arunkumar, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
11	Mr.S.Sarveswaran, Assistant Professor (Sr.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mrs.S.Ranjitha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
12	Mrs.N.Dheerthi, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
14	Mrs.G.Hemalatha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
15	Mrs. J.M. Priyadharsheni, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Mr. Peniel Winifred Raj, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member

Dr. A. Murugarajan, Chairperson, Board of Studies, chaired the meeting and welcomed all the members to the 4th BoS meeting. After a brief introduction to constitution of various committee members in the Board of Studies. He gave the overview on history of SREC, highlights of the department, distribution of credits, proposed credits, Regulations 2020 and one-page curriculum. After a brief introduction, the agenda items listed were taken up for discussion and the following resolutions were passed.

ITEM No.1: Professional Elective Courses:

Additional Professional Electives for Regulations R2020 are grouped under three domains namely Automation, Robotics and Information Technology & Processing.

List of proposed professional elective courses:

S.NO	COURSE CODE	COURSE NAME
1.	20RA2E27	Python Programming for Robotic Engineering
2.	20RA2E28	Wireless Sensor Networks for Robotics
3.	20RA2E29	Robotics for Healthcare applications

4.	20RA2E30	Deep learning for Robotics
5.	20RA2E31	Modern Automated and Intelligent Electric Vehicles
6.	20RA2E32	Grippers and End of Arm Tooling
7.	20RA2E33	Special Machines and Controllers

After presentation of the detailed syllabus of proposed professional elective courses by Dr. A. Murugarajan, Chairperson, Board of Studies.

1. Dr. Sreekumar suggested the following:

- The Course name “Grippers and End of Arm Tooling” can be renamed as “Robot grippers and End of Arm Tooling”.
- The course contents in last module of “Python Programming for Robotics Engineering” should be rearranged. Joints, DOF should come first then Pick and Place Robot Path planning and Control topics later.
- Text books should be checked for latest version. Text books and reference books should be checked for availability of eBooks.
- The book mentioned in the course “Wireless Sensor Networks for Robotics” looks very old and new titles should be suitably added.
- The Course Name “Deep learning for Robotics” can be renamed as “Deep learning for Robots”.
- The Course Name “Modern Automated and Intelligent Electric Vehicles” can be renamed as “Intelligent Electric Vehicles”. Further, in the course modules remove the word introduction. Revisit all the modules and modify suitably based on the recent trends.
- In the course titled “Special Machines and Controllers” include topics like motors for drone applications, autonomous mobile robots and AGVs.

2. Mr.Komal suggested the following:

- Include hands on exercises using python in the course “Python Programming for Robotics Engineering”
- Include specific or exclusive text books for the course “Grippers and End of Arm Tooling”.

Actions Taken:

The above mentioned suggested are taken in to consideration, the course title and course contents of various professional electives will be suitably revised.

- It is resolved that the syllabi for the following new Professional Elective courses under Regulations 2020 be approved and passed.

S.NO	COURSE CODE	COURSE NAME
1.	20RA2E27	Python Programming for Robotic Engineering
2.	20RA2E28	Sensor Networks for Robotics
3.	20RA2E29	Robotics for Healthcare applications
4.	20RA2E30	Deep learning for Robots
5.	20RA2E31	Intelligent Electric Vehicles
6.	20RA2E32	Robot Grippers and End of Arm Tooling
7.	20RA2E33	Special Machines and Controllers

ITEM No.2: Open Elective Courses**List of proposed professional elective courses:**

S.NO	COURSE CODE	COURSE NAME
1.	20RA2E55	Vision for Robotics
2.	20RA2E56	Raspberry Pi for Robotics

1. Dr. Sreekumar suggested the following:

- The Course titled “Vision Guided Robotics” and “Raspberry Pi for Robotics” can be offered as theory cum laboratory courses with 3 credits (2 0 2 3)
- In the Course titled “Vision Guided Robotics”, include the topic robot assisted image acquisition and computer vision and its applications. ROS part can be suitably included in vision-based applications.
- The Course Name “Vision Guided Robotics” can be renamed as “Vision for Robots” since the guided part is missing in the course content.
- The alternatives for Raspberry Pi can be searched in google before renaming the course title.

2. Mr. Denis Ashok suggested the following:

- The Course titled “Raspberry Pi for Robotics” can be modified as “Open CV tools for robotics” where the controllers like Arduino, ATMEGA, Raspberry Pi and Siemens controller can be included.

3. Mr. Komal suggested the following:

- The Course Name “Raspberry Pi for Robotics” can be renamed as “Creating Robots using micro controllers”.

All the members suggested to rename the course title “Automation in Industry 4.0” which is already existing in the open electives list.

Actions Taken:

- The above mentioned suggested are taken in to consideration, the course title and course contents of various open electives will be suitably revised.
- It is resolved that the syllabi for the following new Open Elective courses under Regulations 2020 be approved and passed.

S.NO	COURSE CODE	COURSE NAME
1.	20RA2E55	Vision for Robots
2.	20RA2E56	Robotics with Raspberry Pi (Or) Robots with augmented micro controllers

ITEM No.3: Value Added Courses

All the members suggested to rename the Value-added course titled “IOT Tools” suitably.

It is resolved that the following new value-added courses (30 Hours) will be included under Regulations 2020 for B.E. Robotics and Automation programme.

S.No	Proposed Course	Identified Industry Name and Address	Course Code and Title
1	IOT for Automation	--	20RAIXXX IOT Tools
2	Soft Tools for Robotics	--	20RAIXXX Soft Computing Tools

ITEM No.4: One Credit Courses**List of proposed One Credit Courses:**

S.No	Proposed Course	Identified Industry Name and Address	Course Code and Title
1	Practices on Communication Protocols for Industrial Automation	M/s. Innovate Engineering Products (IEP Solutions) Hosur	20RAI007 Communication Protocols for Industrial Automation
2	Amazon Web Services	M/s. Cmsiclass Coimbatore	20RAI008 Basics of Amazon Web Services
3	SLAM Navigation with Turtle bot	M/s. YOI Robotics Laboratory Coimbatore	20RAI009 SLAM Navigation with Turtle bot
4	Design of EOAT for Industrial Robot	--	20RAI010 Design of EOAT for Industrial Robot
5	Automated Bot Design & Development Using RPA Tools	M/s. RoboRAM Technologies Nagercoil	20RAI011 Automated Bot Design & Development Using RPA Tools
6	Programmable Logic Controller (RS Logix)	M/s. Shree technologies, Coimbatore	20RAI012 Programmable Logic Controller (RS Logix)
7	Robot Manipulator Control using ROS MoveIt	M/s. RobotAI Technologies Coimbatore	20RAI013 Robot Manipulator Control using ROS MoveIt
8	Robotic vision Inspection System and algorithms	M/s. NVIDIA Jetson Nano	20RAI013 Robotic Vision Inspection using NVIDIA Jetson

- All the members suggested to name the one credit course shortly, it may be appropriately renamed to fit in the grade sheet.
- The common feedback is “SLAM Navigation with Turtle bot” is a narrow topic whereas “Amazon Web Services” is broad area. Very difficult to cover the contents within stipulated hours. The contents to be covered in “Amazon Web Services” should be precise. The one credit course on “Google Cloud” can be offered as alternative to “Amazon Web Services”.

Actions Taken:

- The above mentioned suggested are taken into consideration, the course title and course contents of various one credit courses suitably revised.

- It is resolved that the following new one credit courses will be included under Regulations 2020 for B.E. Robotics and Automation programme.

S.No	Course Code	Course Title
1	20RAI007	Communication Protocols for Industrial Automation
2	20RAI008	Basics of Amazon Web Services
3	20RAI009	SLAM Navigation with Turtle bot
4	20RAI010	Design of EOAT for Industrial Robot
5	20RAI011	Automated Bot Design & Development Using RPA Tools
6	20RAI012	Programmable Logic Controller (RS Logix)
7	20RAI013	Robot Manipulator Control using ROS Move It
8	20RAI014	Robotic vision Inspection using NVIDIA Jetson

ITEM No.5: Soft Core Courses

- It is resolved that the following new Soft-Core Courses will be included under Regulations 2020 for B.E. Robotics and Automation programme.

S.NO	COURSE CODE	COURSE NAME
1.	20RAXXX	Totally Integrated Automation
2.	20RAXXX	Design of Transmission Elements in Automation
3.	20RAXXX	Smart Factory Automation

ITEM No.6: Liberal Arts Courses

- It is resolved that the following new Liberal Arts Courses will be included under Regulations 2020 for B.E. Robotics and Automation programme.

S.NO	COURSE CODE	COURSE NAME
1.	20RAXXX	Infographic Communication

ITEM No.7: New M.Tech Programme in Robotics and Artificial Intelligence (AI)

HOD is proposed about the new PG programme M.Tech Robotics and AI

Robotics is a key component of the Cyber-Physical Systems (CPS) revolution that is currently taking place in the world. The Government of India has already committed to putting into practice the New Education Policy (NEP), which highlights new programmes and courses related to cutting-edge technologies like robotics, artificial intelligence, data science, and computer

programming. To meet the growing demand for skilled engineers with a new emerging technologies, a new proposed study programme at the master's level is intended to address these future topics in the robotics and AI fields. According to AICTE guidelines, a few Indian IITs (IIT Guwahati) and private universities have begun offering this programme as an M.Tech. Robotics and AI programme.

For the members' approval, the Department of Robotics and Automation would like to propose the launch of a new PG programme in M. Tech. Robotics and AI as an industry-collaborative programme with an initial intake of six students. The department has already made contact with the few industries for collaboration. The proposed curriculum and syllabus in detail will be discussed at the next meeting.

Suggestions by the members

- Dr. Sreekumar inquired about the specifics of related PG programmes provided by the IITs, other universities, and colleges affiliated with Anna University. Also, clarified about the AI courses in the curriculum related to robotics applications.
- Dr. Santhakumar appreciated the new program's initiatives.
- Dr. Denis clarified on the industries that will contribute to the creation of curriculum and internship opportunities.

Action Taken:

It is resolved that new PG programme in M.Tech in Robotics and AI will offered from the next academic year with approval of the members and further detailed syllabus and curriculum will proposed in the next meeting

General Suggestions/Comments from External Expert Members and University Nominee to be recorded.

- Dr. Sreekumar asked clarification regarding the total no of credits for Honors degree and Minors degree. He enquired about the 20 credits for both Honors and Minors. He also suggested to change 3 credit paper to 4 credit paper.
- All the members appreciated the proposed professional electives / open electives and one credit courses.

UG Programmes:

R2020

- It is resolved that Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2020.

- It is resolved that Revised Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2021 & onwards.
- It is resolved that the following NPTEL courses are approved for credit transfer during December 2022. - (if applicable). - Nil
- It is resolved that the Result Analysis for the Academic Year 2021 – 2022 are approved and passed.
- It is resolved that the Degree awarded details for the Academic Year 2021 – 2022 are approved and passed.
- It is resolved that the curriculum and syllabi be approved for the Specialization / minor in degree programme – if any – Nil
- It is resolved that the Revised Uniform Evaluation Method of Students based on Relative Grading, as per the communications received from Anna University, Chennai be approved and passed.
- Readmitted / transferred student details (if applicable) – to be included.
- Credit balance for the Readmitted / transferred students (if applicable) – to be included.

S&H

- It is resolved that the UHV assessment pattern be approved and passed.

Fourth Board of Studies Meeting – December 2022

Name of the Member	Designation	Online Attendance
Dr.A.Murugarajan	Chairperson	Present
Dr.M.Sreekumar	University Nominee	Present
Mr. Yerra Komala Kalyanraman	Industry Expert	Present
Mr. Arjun Sridhar	Industry Expert	Absent
Dr.Shanthakumar Mohan	Expert from IIT	Present
Dr. S.Denis Ashok	Subject Expert from Other University	Present
Mr. Harwinder Singh	Meritorious Alumni (UG-EEE)	Present

Dr.R.Sudhakar	Department Coordinator (RA)	Present
Dr.A.Kishore kumar	Faculty Member (RA)	Present
Dr.M.S.Sureshkumar	Faculty Member (RA)	Present
Dr.K.Arunkumar	Faculty Member (RA)	Present
Mr.S.Sarveswaran	Faculty Member (RA)	Present
Mrs.S.Ranjitha	Faculty Member (RA)	Present
Mrs.N.Dheerthi	Faculty Member (RA)	Present
Mrs.G.Hemalatha	Faculty Member (RA)	Present
Mrs. J.M. Priyadharsheni,	Faculty Member (RA)	Present
Mr. Peniel Winifred Raj	Faculty Member (RA)	Present



**CHAIRPERSON
BOARD OF STUDIES**

Department of Robotics and Automation

**Chairman
Board of Studies**



SRI RAMAKRISHNA ENGINEERING COLLEGE, COIMBATORE – 22

[Educational Service : SNR Sons Charitable Trust]

[Autonomous Institution, Reaccredited by NAAC with 'A+' Grade]

[Approved by AICTE and Permanently Affiliated to Anna University, Chennai]

[ISO 9001:2015 Certified and all eligible programmes Accredited by NBA]

**MINUTES OF THE THIRD BOARD OF STUDIES MEETING FOR THE UG
ROBOTICS AND AUTOMATION PROGRAMME HELD ON 26.02.2022 AT 1.30
PM IN AUDITORIUM BOARD ROOM, SREC CAMPUS**

The following members attended the above meeting.

S.No	Member Details	Category
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.M.Sreekumar Professor, Department of Mechanical Engineering, IIITDM Kancheepuram Vandalur – Kelambakkam Road, Chennai – 600 127	University Nominee
3	Mr. Arjun Sridhar Head – Technology Development Division, Craftsman Automation, Coimbatore	Industry Expert
4	Mr. Yerra Komala Kalyanraman Data Analytics Solutions - Center of Excellence Robert Bosch GmbH, Coimbatore - 641035	Industry Expert
5	Dr.Shanthakumar Mohan Associate Professor Department of Mechanical Engineering IIT Palakkad, Kerala.	Expert from IIT
6	Dr. S.Denis Ashok Professor, School of Mechanical Engineering Department of Design and Automation, VIT University, Vellore	Subject Expert from Other University

7	Mr. Harwinder Singh Principal Engineer Rockwell Automation, Coimbatore	Meritorious Alumni (UG-EEE)
8	Mr.Ganesh Chief officer - Industry Institute Interface / SREC	Special Invitee
9	Dr. David Rathnaraj HOD - Department of Aeronautical Engineering / SREC	Controller of Examinations
10	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation / SREC	Department Coordinator
11	Dr.A.Kishore kumar, Assistant Professor (Sl.Gr) Department of Robotics and Automation / SREC	Faculty Member
12	Mr.S.Sarveswaran, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
13	Mrs.S.Ranjitha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
14	Mrs.N.Dheerthi, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
15	Mrs.G.Hemalatha, Assistant Professor Department of Robotics and Automation / SREC	Faculty Member
16	Mr.N.Vigneswar Assistant Professor Department of Mathematics / SREC	Faculty Member
17	Mr.C.Ranjeethkumar Assistant Professor Department of Information Technology / SREC	Faculty Member

Dr. A. Murugarajan, Chairperson, Board of Studies, chaired the meeting and welcomed all the members to the 3rd BoS meeting. After a brief introduction to constitution of various committees and the members in academic committee like Department Advisory Committee, Industry Advisory Board and Programme Alumni Interactive Cell. He gave the overview on history of SREC, programmes offered and outcome-based education and the introduction of BE Robotics and Automation in the year 2019. He further presented the Vision and Mission Statement of the College, Vision and Mission Statement of the Department, Program Outcomes (POs), Program Educational Objectives (PEOs) and Program Specific Outcomes (PSOs) along with domain / thrust areas of Robotics and Automation.

After a brief introduction, the agenda items listed were taken up for discussion and the following resolutions were passed.

1. Approved Curriculum and Syllabi- Regulations 2020 (I-IV Sem)
2. Proposed Curriculum and Syllabi- Regulations 2020 (V-VIII Sem)
3. Proposed Professional Elective Courses
4. Proposed One Credit Courses and NPTEL-Swayam courses
5. General Agenda

ITEM No.1: Approved Curriculum and Syllabi- Regulations 2020 (I-IV Sem):

- Mr. Arjun Sridhar gave the following suggestions:
 - Need for courses like advanced materials, CNC machines and metrology in the robotics and automation field is very less. Instead of CNC machines, drives and controllers can be given importance.
 - CNC machine program using G and M Codes can be done by even fitter/diploma graduate. Instead of teaching CNC programming, students can be taught C, C++, C#, embedded system and PLC programming.
- Mr. Komal gave the following suggestions:
 - Instead of pure robotics courses, courses like AI, IOT and Cloud computing can be included in the curriculum to provide knowledge on current requirements of the industry.
 - IOT & Smart Devices, Cloud Computing along with lab component can be included in the curriculum.
- Dr. Sreekumar, University Nominee suggested that mechanics of materials, FEM concepts can be included in Computational Mechanics syllabus offered in 2nd semester.

Actions Taken:

- It is resolved that new core course on IOT & Smart Devices / Cloud Computing Devices is offered along with Smart Factory Laboratory in the same semester

ITEM No.2: Proposed Curriculum and Syllabi- Regulations 2020 (V-VIII Sem):

- Dr. Santhakumar Mohan expressed his view that why 7 theory courses are given in the single semester (5th Semester). He asked whether it is possible to shift open elective to 7th semester.
- Mr. Arjun Sridhar suggested that control system engineering can be offered as Theory cum laboratory course instead of pure theory course.
- All the member suggested the following points:
 - The course titled "Intelligent Robots" offered in 6th semester is irrelevant to the current industry requirements. The course can be replaced with IOT & Smart Devices

/ Cloud Computing Devices. The course titled “Intelligent Robots” can be offered in Professional electives category if required.

- The course contents included in Smart factory laboratory should be specific. They also asked whether any prerequisite theory content relevant to Smart factory laboratory is being taught in any course.
- The Power Electronics and Drives Theory and Laboratory should be shifted to 5th semester instead of being offered in 6th semester.
- AI for Robotics, Smart Factory Laboratory should be shifted to 6th semester instead of being offered in 5th semester. In the 6th semester, IOT devices theory course can be offered which consists of concepts like digital twin, PTC Thingworx etc.

Actions Taken:

- Control system engineering is offered as Theory cum laboratory course
- Intelligent Robots course moved to professional electives category
- IOT & Smart Devices / Cloud Computing Devices offered in 6th semester
- Smart Factory Laboratory moved to 6th semester instead of being offered in 5th semester
- Power Electronics and Drives Theory and Laboratory shifted to 5th semester instead of being offered in 6th semester

ITEM No.3: Proposed Professional Elective Courses:

- Dr.Sreekumar, University Nominee suggested that the following points:
 - The course titled “Building Automation” can be renamed as “Automation System Design”.
 - Collaborative Robots Course can be included in professional electives list.
- Komal suggested that basics of Robot Operating System (ROS) can be included in Autonomous Mobile Robots Theory and Laboratory. Advanced ROS can be included in professional electives list.
- All the members suggested that instead of Big Data Analytics, the course can be offered as Cloud Computing techniques in professional electives.

Actions Taken:

- Professional Elective “Building Automation” is renamed as “Automation System Design”.
- Professional Elective “Big Data Analytics” is renamed as “Cloud Computing techniques”
- Collaborative Robots Course is included in Professional Electives.
- Advanced ROS is included in Professional Electives instead of Basic ROS.
- Basics of Robot Operating System (ROS) is included in Professional Core Course - Autonomous Mobile Robots Theory and Laboratory.

ITEM No.4: Proposed One Credit Courses and NPTEL-Swayam courses

(a) The Department of Robotics and Automation is offering the following one credit courses under Regulations 2016.

S.No	Proposed Course	Identified Industry Name and Address	Course Code and Title
1	Exploring Robot Operating System (ROS) Basics and Advanced	RigBetel Labs, Pune	16RAI001 Exploring ROS: Basics and Modelling
2			16RAI003 ROS Tools, Mapping & Navigation
3	Industrial Control Panel Design	ADNA Automation, Coimbatore	16RAI002 Industrial Electrical Panel Design
4	Robot Simulation	Axis Global Institute of Industrial Training (AGIIT), Coimbatore	16RAI004 Robotic Simulation using Moto Sim Software

(b) The following NPTEL Swayam courses are proposed for Credit transfer in 7th semester instead of a Professional Elective Course after the successful completion of the course by the students:

S.No	Name of the Course	Offered by	Duration
1	Deep learning	IIT Ropar - SudharshanIyengar & IIT Kharagpur - Prof. P.K. Biswas	12 Weeks
2	Reinforcement learning	IIT Madras - Prof. Balaraman Ravindran	12 Weeks
3	Embedded Systems Design	IIT Kharagpur - Prof. Anupam Basu	12 Weeks
4	Blockchain and its Applications	IIT Kharagpur - Prof. Sandip Chakraborty, Prof. Shamik Sural	12 Weeks
5	Communication Networks	IIT Kharagpur - Prof. Goutam Das	12 Weeks
6	Architectures and Programming	IIT Kharagpur - Prof. Soumyajit Dey	12 Weeks
7	Fundamentals of Automotive Systems	IIT Madras - Prof. C. S. Shankar Ram	12 Weeks
8	High Power Multilevel Converters - Analysis, design and operational issues	IIT Delhi - Prof. Anand Rup	12 Weeks

9	Product Design and manufacturing	IIT Kanpur - Dr. Amandeep Singh /Prof. J. Ramkumar	12 Weeks
10	Computer Integrated Manufacturing	IIT Kanpur - Prof. J. Ramkumar Prof. Amandeep Singh	12 Weeks
11	Industrial Automation and Control (Course sponsored by Aricent)	IIT Kharagpur - Prof. S. Mukhopadhyay	12 Weeks
12	Industrial Automation and Control	IIT Kharagpur - Prof. S. Sen Prof. S. Mukhopadhyay	12 Weeks
13	Automation in Production Systems and Management	IIT Kharagpur - Prof. Pradip Kumar Ray	12 Weeks
14	An Introduction to Artificial Intelligence	IIT Delhi - Prof. Mausam	12 Weeks
15	Introduction to Embedded System Design	IIT Jammu - Prof. Badri N Subudhi Prof.Dhananjay V. Gadre	12 Weeks

Suggestions/Comments from External Expert Members and University Nominee:

- Dr.Sreekumar, University Nominee suggested the following points:
 - The credit weightage is very less in final year courses. It should be given due importance because of the final project work.
 - The no of credits to be earned for final year project work is 6, which is very less.
 - The students graduated from Robotics and Automation department opt which stream in GATE. The students can choose either Mechanical / EEE /ECE streams based on their interest.
 - In Overall curriculum, balancing of courses need to be done
- Mr. Harwinder Singh suggested the following points:
 - Both Robotics and Automation should be given equal importance in the curriculum.
 - Some duplications in the course content can be checked. If possible, few courses can be clubbed if the importance is very less relevant to robotics and automation.
 - The contents included in the Analog devices and Integrated Circuits Course has to be checked for any matching with contents of any other courses being offered.
 - The students should learn the science / logic behind the working of any system. Mere learning only the code / parameter will not be sufficient to develop any system for the industry requirement.
- Dr.Denis Ashok asked about the guidelines provided for minor / honor degrees. He also enquired about the maximum credits allowed per semester.
- Dr. Santhakumar Mohan suggested that students can select electives from the basket available in different domains. He also enquired about the courses which are provided to make the students job ready inline to system engineer perspective and application engineer in automaton industry.
- Mr.Komal suggested that student employability can be improved when the students choose courses related to Embedded Systems, PLC, IOT and Cloud Computing Technologies.

- Mr.Arjun Sridhar suggested that course on communication networks like CAN, Profinet, Modbus, EtherCAT and ethernet should be included in the core course of the curriculum.

Actions Taken:

- Courses related to Embedded Systems, PLC, IOT and Cloud Computing Technologies is included in the curriculum.
- Project Work and Internship Weightage is checked with Controller of Examinations.
- Over all Curriculum Balancing is done to give equal weightage to robotics and automation streams.

ITEM No.5: Common Agenda

UG Programmes: R2020

- It is resolved that Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2020 & onwards.
- It is resolved that the syllabi for the following new professional courses under Regulations 2020 be approved and passed.

S.NO	COURSE CODE	COURSE NAME
1.	20RA2E01	Autonomous Vehicles
2.	20RA2E02	Cyber Security in Industrial Automation
3.	20RA2E03	Robotic Process Automation
4.	20RA2E04	Robot Dynamics and Control
5.	20RA2E05	Advanced Manipulator Kinematics
6.	20RA2E06	Robot Intelligence and Task Planning
7.	20RA2E07	Machine Learning for Robotics
8.	20RA2E08	Augmented Reality and Virtual Reality
9.	20RA2E09	Signal Processing and its Applications
10.	20RA2E10	Smart Sensors and Data Fusion
11.	20RA2E11	Embedded Systems and RTOS
12.	20RA2E12	Advanced Control Systems
13.	20RA2E13	Cloud Computing techniques
14.	20RA2E14	Intelligent Controllers
15.	20RA2E15	Advanced Robot Operating Systems
16.	20RA2E16	Process Control & Automation
17.	20RA2E17	Soft and Micro Robotics

18.	20RA2E18	Cognitive Robotics
19.	20RA2E19	Automation System Design
20.	20RA2E20	Additive Manufacturing and Tooling
21.	20RA2E21	Digital Manufacturing
22.	20RA2E22	Robotic Welding and Inspection System
23.	20RA2E23	Biomechanics and Robotics
24.	20RA2E24	Industrial Computer Networks and Communication Protocols
25.	20RA2E25	Cyber Physical Systems
26.	20RA2E26	ARM Controller
27.	20RA2E27	Intelligent Robots
28.	20RA2E28	Collaborative Robots

- It is resolved that the following new one credit courses will be included under Regulations 2020 for B.E. Robotics and Automation programme.

S.No	Proposed Course	Identified Industry Name and Address	Course Code and Title
1	Robot Operating System – basic and Advanced	RigBetel Labs, Pune	20RAI001 Exploring ROS: Basics and Modelling
2			20RAI002 ROS Tools, Mapping & Navigation
3	Electrical Panel Design	ADNA Automation, Coimbatore	20RAI003 Industrial Electrical Panel Design
4	Motion Control	VRD Drives and Hindustan University	20RAI004 Motion Control
5	Automation	Axis Global Institute of Industrial Training, Coimbatore	20RAI005 Automation using PLC, SCADA and HMI
6	Robot Simulation	Axis Global Institute of Industrial Training, Coimbatore	20RAI006 Robotic Simulation using Moto Sim Software

- The certificate courses / consultancy projects are provided covering the laboratory facilities developed under Centre of Excellence in Smart Factory / Industry 4.0.
- It is resolved that the following NPTEL courses are approved for credit transfer during December 2021 - **Not applicable**

- It is resolved that the NPTEL courses are approved for credit transfer during May 2022 - **Not applicable**
- It is resolved that the curriculum and syllabi be approved for the Specialization / minor in degree programme: - **Not applicable**
- Amendment to Clause 35 of B.E./B.Tech programmes under Regulations 2020 for the 2020 – 2021 admitted students only.

For mandatory courses every student shall put in the required attendance and training as per the course requirement. However, the successful completion of one course from Personality and Character Development category (OR) one course from Allied Skills category is sufficient in addition to mandatory [EEC] Employment Enhancement Courses / department allied courses as prescribed in the curriculum of the programme concerned for the award of degree.

This decision is taken as ONE TIME MEASURE and with due approval from the academic council standing committee / competent authority for the 2020 – 2021 admitted students only.

The activities conducted under “Roboclub” and “The Robotics Society, India” are considered under mandatory course in Regulations R2020.

Course Code	Course Title	Faculty Advisor	Remarks
20MC101	Robotics and Automation Association (RAA)	Mrs.N.Dheerthi	Approved
20MC220	RoboClub	Mr.S.Sarveswaran	Approved
20MCXXX	The Robotics Society, India	Dr.A.Kishorekumar	Yet to Approved

*The Robotics Society, India is planned to inaugurate on 08.03.2022 and it is yet to be approved.

R2016

- It is resolved that Regulation 2016 (Version 1.0) will be followed (Choice Based Credit System) for all B.E./B.Tech. programmes for students admitted during the Academic year 2018-2019 and 2019-2020.
- Amendment to Clause 3 of B.E./B.Tech programmes under Regulations 2016.

The clause 13 of Regulation 2016 V-1.0 (Choice Based Credit System) shall be completely exempted for the candidates admitted during the year 2018 – 2019 and 2019 – 2020 and they are permitted to appear for all the reappearance examinations in the subsequent semester up to the maximum period of study.

This decision is taken as ONE TIME MEASURE and with due approval from the academic council standing committee / competent authority.

- Amendment to Clause 15.3 of B.E./B.Tech programmes under Regulations 2016.

Clause	Existing	Amended
15.3	The student who fails in the laboratory course shall repeat the same in the subsequent semester and repeat the laboratory course again.	If a candidate fails to secure a pass or is absent for the end semester examinations in the laboratory course he/she shall do reappearance registration for that laboratory course in the subsequent semester / when offered next. This is applicable for the candidates admitted under Regulations 2016.

- It is resolved that the following new electives will be included under Regulations 2016 (Ver 1.0) for B.E. Robotics and Automation programme. - Nil
 - It is resolved that the approved Summer School's / WinterSchool's / GIAN courses conducted by the foreign Universities for a minimum period of 10 days may be considered as equivalent to One Credit Course in the Regulation 2016 (Ver 1.0) / may be considered for credit transfer
 - It is resolved that the following NPTEL courses are approved for credit transfer during December 2021. - Not applicable
 - It is resolved that the NPTEL courses are approved for credit transfer during May 2022.
- 1. Introduction to Industry 4.0 and Industrial Internet of Things** by Prof. Sudip Misra IIT Kharagpur (11 students got enrolled in January 2022, if they passed with 60%, they are eligible for credit transfer in May 2022)
- It is informed that the register number allotted for the students admitted to the various UG/PG programmes from the academic year 2021 – 2022 will be prefixed with the college code 7181. Hence the register number will be as follows.

Register Number: 718121XXYYZZ

7181 – College Code

21 – Year of Admission

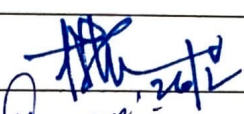
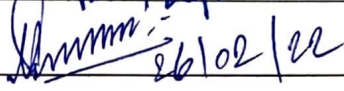
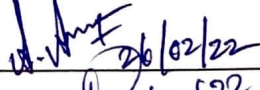
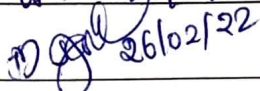
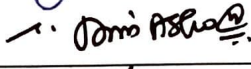
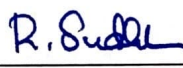
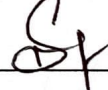
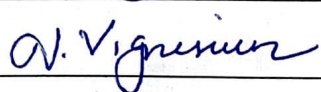
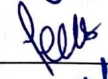
XX – Branch Code

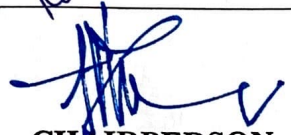
Y – Section

ZZ – Serial number

- The following decisions are taken as one time measure due to the COVID Pandemic.
 - Classes to be handled online with 5 sessions per day.
 - End semester examination to be conducted online.
- Credit balance for the Readmitted / transferred students - Nil
- Readmitted / transferred student details – Nil

Third Board of Studies Meeting

Name of the Member	Designation	Signature
Dr.A.Murugarajan	Chairperson	
Dr.M.Sreekumar	University Nominee	 26/02/22
Mr. Yerra Komala Kalyanraman	Industry Expert	
Mr. Gowtham Ram / Arjun Sridhar	Industry Expert	 26/02/22
Dr.Shanthakumar Mohan	Expert from IIT	 26/02/22
Dr. S.Denis Ashok	Subject Expert from Other University	
Mr. Harwinder Singh	Meritorious Alumni (UG-EEE)	
Mr.M.Ganesh	Chief officer - Industry Institute Interface	- ABSENT -
Dr. David Rathnaraj	Controller of Examinations	- ABSENT -
Dr.R.Sudhakar	Department Coordinator (RA)	
Dr.A.Kishore kumar	Faculty Member (RA)	
Mr.S.Sarveswaran	Faculty Member (RA)	
Mrs.S.Ranjitha	Faculty Member (RA)	
Mrs.N.Dheerthi	Faculty Member (RA)	
Mrs.G.Hemalatha	Faculty Member (RA)	
Mr.N.Vigneswar	Faculty Member (Mathematics)	
Mr.C.Ranjeethkumar	Faculty Member (Information Technology)	


CHAIRPERSON

BOARD OF STUDIES

Department of Robotics and Automation

Dr. A. MURUGARAJAN, Ph.D (IITM)

Professor & Head

Dept. of Robotics and Automation

Sri Ramakrishna Engineering College

Coimbatore - 641 022 Page 11/11



SRI RAMAKRISHNA ENGINEERING COLLEGE, COIMBATORE – 22

[Educational Service: SNR Sons Charitable Trust]

[Autonomous Institution, Accredited by NAAC with 'A' Grade]

[Approved by AICTE and Permanently Affiliated to Anna University, Chennai]

[ISO 9001:2015 Certified and all eligible programmes Accredited by NBA]

**MINUTES OF THE 2nd BOARD OF STUDIES MEETING FOR THE B.E
ROBOTICS AND AUTOMATION PROGRAMME HELD ON 27.03.2021 AT
10:00 AM IN ONLINE MODE (Cisco Webex Platform) FOR THE DEPARTMENT
OF ROBOTICS AND AUTOMATION**

The following members attended the above meeting.

S.No	MEMBER	CATEGORY
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.B.Vinod HOD - Robotics and Automation Department PSG College of Technology, Coimbatore	University Nominee
3	Dr.K.V.Shriram Associate Professor - Computer Science Engineering Amrita Vishwa Vidyapeetham Deemed University, Coimbatore.	Subject Expert outside the Parent University
4	Mr. PonManivannan Principal Technology Leader, Head – Technology Solutions & Innovation Center, L&T Technology Services, Chennai	Industry Expert
5	Mr. Gautham Ram Director - Craftsman Automation Pvt Ltd, Coimbatore	Industry Expert
6	Mr. Hemanandan (2008 / Mechanical) Design Engineer ELGI Equipments Limited, Coimbatore	Meritorious Alumni (UG-Mechanical)
7	Mr.Ganesh Chief officer - Industry Institute Interface	Special Invitee

8	Dr. David Rathnaraj HOD - Department of Aeronautical Engineering	Controller of Examinations
9	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation	Department Coordinator (RA)
10	Mr.S.Sarveswaran, Assistant Professor Department of Robotics and Automation	Faculty Member (RA)
11	Mrs.S.Ranjitha, Assistant Professor Department of Robotics and Automation	Faculty Member (RA)
12	Mr. T. Velmurugan, Assistant Professor (Sl.G), Department of Mechanical Engineering,	Faculty Member (Mechanical)
13	Mr.S.Kaushik, Assistant Professor (Sr.Gr) Department of Electronics and Instrumentation Engineering	Faculty Member (EIE)
14	Mrs.V.Sangeetha, Assistant Professor (Sr.Gr) Department of Electronics and Communication Engineering	Faculty Member (ECE)
15	Dr.S.Allirani, Associate Professor Department of Electrical and Electronics Engineering	Faculty Member (EEE)
16	Dr.K.Uthayarani, Professor and Head Department of Physics	Faculty Member (Physics)
17	Dr.L.Raghunath, Professor and Head Department of Chemistry	Faculty Member (Chemistry)
18	Dr.R.Anuradha, Associate Professor Department of Computer Science Engineering	Faculty Member (CSE)
19	Mrs.S.Sangeetha , Assistant Professor (Sr.Gr) Department of Mathematics	Faculty Member (Mathematics)

Dr. A. Murugarajan, Chairperson, Board of Studies, chaired the meeting and welcomed all the members to the 2nd BoS meeting. After a brief introduction to constitution of various committees and the members in academic committee like Department Advisory Committee, Industry Advisory Board and Programme Alumni Interactive Cell. He gave the overview on history of SREC, Programmes offered and outcome-based education and the introduction of BE Robotics and Automation in the year 2019. He further presented the Vision and Mission Statement of the College, Vision and Mission Statement of the Department, Program Outcomes (POs), Program Educational Objectives (PEOs) and Program Specific Outcomes (PSOs) along with domain / thrust areas of Robotics and Automation.

The agenda items listed were taken up for discussion and the following resolutions were passed.

1. Proposed distribution of credits in R2016 regulations
2. Proposed courses for 5th to 8th semesters under R2016 regulations
3. Professional Elective & Open Elective courses under R2016 regulations
4. Regulations R2020 and proposed distribution of credits
5. Proposed courses for 3rd to 4th semesters under R2020 regulations
6. Proposed one credit courses and NPTEL courses for credit transfer

Item 1: Proposed distribution of credits in R2016 regulations

- Dr.B.Vinod asked about the total no of credits for Lateral Entry in R2016 regulations
Regular – 172 credits; LE - 123 credits.
- It is resolved that Regulation 2016 (Version 1.0) will be followed (Choice Based Credit System) for all B.E./B.Tech. programmes for students admitted during the Academic year 2018-2019 and 2019-2020.

Item 2: Proposed courses for 5th to 8th semesters under R2016 regulations

The courses offered from 5th to 8th semester under R2016 regulations is taken up for discussion and the following suggestions are provided by the Board of Studies members.

Semester	BoS Member	Suggestions Given
V	Dr.B.Vinod (University Nominee)	<u>Robotics Laboratory</u> Include few experiments using other simulation software's Action Taken: Added experiments using Robot DK software
	Mr. PonManivannan (Industrial Expert)	Include Huawei Mobile Services (HMS) topic in robotics laboratory (simulation)
VI	Dr.K.V.Shriram (Academic Expert)	<u>Autonomous Mobile Robots Laboratory</u> Include HMS topic. App is supported on android technology with open source and cloud storage. Lot of packages are available supporting mobile robotics. Action Taken: Added the proposed content in the course
	Dr.B.Vinod (University Nominee)	<u>Power Electronics and Industrial Drives Laboratory</u> Include one experiment in AC servo drives Action Taken: Experiments based on AC servo drives is included
VII	Dr.B.Vinod (University Nominee)	<u>Design of Grippers and Tools</u> Change the name of the course and add few topics related to soft grippers Action Taken: Course renamed as "Grippers and End of Arm Tooling" and added soft grippers topics.

Dr.B.Vinod (University Nominee)	<u>Advanced Robot Dynamics Lab</u> Rename the course and title and remove the types of robot portions Action Taken: Renamed as Robot Dynamics and Control Laboratory
Dr.B.Vinod (University Nominee)	<u>Smart Factory Automation</u> Additive manufacturing (AM) concepts should be separate course.
Mr. PonManivannan (Industrial Expert)	<u>Smart Factory Automation</u> Few topics are not relevant to the course. (Ex. Smart Cities, additive manufacturing.) Action Taken: Smart Cities topic removed and last module renamed as Digital Manufacturing
Mr.Gautham Ram (Industrial Expert)	<u>Smart Factory Automation</u> Rename the last module as Digital Manufacturing.

Finally, all the members resolved the syllabus framed for 5th to 8th semesters under R2016 regulations for the students admitted during the Academic year 2018-2019 and 2019-2020.

Item 3: Professional Elective & Open Elective Courses under R2016 regulations

The Professional Elective Courses offered from 5th to 8th semester, Open Elective Courses offered in 5th and 6th semester under R2016 regulations as well as Open Elective Courses offered in 3rd, 4th and 5th semesters under R2020 regulations is taken up for discussion and the following suggestions are provided by the Board of Studies members.

BoS Member	Suggestions Given
Dr.B.Vinod (University Nominee)	Course: Robotic Welding and Inspection System • Include online inspection/seam tracking techniques in Robot welding course • Include Medical Robotics related courses to match with PSO2
Dr.K.V.Shriram (Academic Expert)	Course: Signal Processing and its applications • He asked about the depth of coverage of syllabus whether it is covering everything or only fundamentals are covered. Since Signal can be anything. It may be voice, video or gestures. • Natural language processing – speech recognition language models can be included Course: Autonomous Vehicles • Include Advanced Driver Assistance System and Driver Monitoring System in automotive communication which is required for fully autonomous vehicles. Course: Industrial Computer Networks and Communication Protocols • Protocols supporting Robot communication and IOT device

BoS Member	Suggestions Given
	communication has to be included. Course: ARM Controller Arm Controller course requires lab facilities to conduct and teach the cortex M3/M4. It can be offered as Theory cum laboratory Course.
Mr. PonManivannan (Industrial Expert)	Course: Signal Processing and its applications - Syllabus is very vast. - In the industrial automation scenario, visual inspection or camera-based vision system is highly used to identify the defects. - Voice activated system is used very less in industry. - Image based quality inspection and production line inspection are highly used in the industries.
	Course: Autonomous Vehicles - Add AGVs related topics in Autonomous Vehicle course - Connected Car Technology is not in the scope of autonomous vehicles
	Course: Signal Processing and its applications Add vision-based system courses rather than signal processing and its applications
	General Comments: - Include Cyber security courses in Information system category - Operational Technology and Information technology (OT & IT) can be offered as professional elective - Include Biomimetics topics in soft robotics course - Include digital twin topics in Cyber Physical Systems - Cloud based Manufacturing topics to be included in AMS - Add Cyborg and Humanoid robots in Cognitive Robotic course - Add IIOT topics in Industrial Computer Network course Action Taken: Suggested topics added in the respective courses <u>New course is added in professional elective:</u> - Biomechanics and Robotics

Finally, all the members resolved the following professional and open electives will be included under Regulations 2016 (Ver 1.0) for B.E. Robotics and Automation Programme

PROFESSIONAL ELECTIVES

S.NO	CATEGORY	COURSE NAME
1.	PE1	16RA2EXX Advanced Manipulator Kinematics
2.	PE2	16RA2EXX Smart Sensor and Data Fusion
3.	PE3	16RA2EXX Robotics: Dynamics and Control
4.	PE4	16RA2EXX Cyber Security in Industrial Automation
5.	PE5	16RA2EXX Robot Intelligence and Task Planning
6.	PE6	16RA2EXX Machine Learning for Robotics
7.	PE7	16RA2EXX Augmented Reality and Virtual Reality
8.	PE8	16RA2EXX Signal Processing and Applications
9.	PE9	16RA2EXX Robotic Process Automation
10.	PE10	16RA2EXX Embedded Systems and RTOS
11.	PE11	16RA2EXX Advanced Control Systems
12.	PE12	16RA2EXX Big Data Analytics
13.	PE13	16RA2EXX Intelligent Controllers
14.	PE14	16RA2EXX Robot Operating Systems
15.	PE15	16RA2EXX Process Control & Automation
16.	PE16	16RA2EXX Soft and Micro Robotics
17.	PE17	16RA2EXX Cognitive Robotics
18.	PE18	16RA2EXX Smart Building Automation
19.	PE19	16RA2EXX Additive Manufacturing and Tooling
20.	PE20	16RA2EXX Digital Manufacturing
21.	PE21	16RA2EXX Robotic Welding and Inspection System
22.	PE22	16RA2EXX Autonomous Vehicles
23.	PE23	16RA2EXX Biomechanics and Robotics
24.	PE24	16RA2EXX Industrial Computer Networks and Communication Protocols
25.	PE25	16RA2EXX Cyber Physical Systems
26.	PE26	16RA2EXX ARM Controller

OPEN ELECTIVES – R2016

S.NO	CATEGORY	COURSE NAME
1.	OE1	16RA2EXX Industrial Robotics and Material Handling Systems
2.	OE2	16RA2EXX Robotic System Engineering

OPEN ELECTIVES – R2020

S.NO	CATEGORY	COURSE NAME
1.	OE1	20RA2EXX Automation in Industry 4.0
2.	OE2	20RA2EXX Social Robotics
3.	OE3	20RA2EXX Embedded Systems for Robotic Applications
4.	OE4	20RA2EXX Robotic System Engineering

Finally, all the members resolved the above mentioned open electives included under Regulations 2020 (Ver 1.0) respectively for B.E. Robotics and Automation Programme

General Comments

- Dr.Vinod inquired about distribution of credits to be uniform across the various programs. Also, he commented about no of course outcomes to be fixed with around 4 to 6. And it should be depending on no of modules
- Dr.B.Vinod suggested to rethink about Programme Specific Objectives (PSO2) and indicated that the application such as medical and healthcare sectors has to be included in syllabus relevant to PSO2.
- Dr.B.Vinod suggested to include few courses related to medical applications like Medical Robotics in professional electives.
- Mr. Gowtham Ram inquired about selection of professional electives by the students and commented that courses are vast.
- Smart Building Automation course to be renamed as Building Automation as suggested by all the members
- Members suggested that removal of Data structures and signal processing courses not relevant to the core idea of the program
- Members suggested that modelling/simulation of automation systems/embedded robotics relevant one credit courses to be offered.
- Structured curriculum well balanced and Proposed Courses meet the requirements of the program offered
- Proposed courses (V to VIII), new electives and syllabus contents was discussed and approved by the BoS Members.

Item 4: Regulations R2020 and Proposed Distribution of Credits

- Dr.B.Vinod asked about the total no of credits for Lateral Entry in R2020 regulations
Regular – 162 credits; Lateral Entry - 120 credits
- It is resolved that Regulation 2020 (Version 1.0) will be followed (Choice Based Credit System) for all B.E./B.Tech. programmes for students admitted during the Academic year 2020-2021 onwards.

Item 5: Proposed courses for 3rd to 4th semesters under R2020 regulations

The courses offered from 3rd to 4th semester under R2020 regulations is taken up for discussion and the following suggestions are provided by the Board of Studies members.

Semester	BoS Member	Suggestions Given
III	Dr.B.Vinod (University Nominee)	<u>Electrical Machines and power systems</u> Only three CO's. Need to change in between 4 to 6 Action Taken: COs are suitably modified.
	Mr. PonManivannan (Industrial Expert)	Suggested to include IoRT topics in Robotics Technology Action Taken: Added the proposed content in the course
IV	Mr.Gautham Ram (Industrial Expert)	Suggested to rename the course Automation control systems since it covers industrial controls. Inquired about Ladder logic and structured text, instruction list and other type of programming languages Action Taken: Course renamed as "Industrial Control Systems"

General Comments

- Entire curriculum and syllabus content framed are well balanced
- The minor corrections suggested and discussed in the meeting can be incorporated.
- Taxonomy in the Course Outcomes has to be revised and modified suitably

Item 6: Proposed one credit courses and NPTEL courses for credit transfer**NPTEL Courses:**

- It is resolved that the following NPTEL courses are approved for credit transfer during December 2020. - (if applicable). - Not Applicable
- It is resolved that the NPTEL courses are approved for credit transfer during January 2022 and June 2022

S.No	NPTEL Code	NPTEL Title	Credits	Duration (Weeks)	Equivalent SREC Course
1	noc21_me37	Robotics: Basics and Selected Advanced Concepts	3	12	
2	noc20-me58	Automation in Manufacturing	3	12	
3	noc20_cs69	Introduction to Industry 4.0 and Industrial Internet of Things	3	12	
4	noc21-me96	Advanced Dynamics	3	12	
5	noc21-me129	Design of Mechatronics Systems	3	12	
6	noc21-me115	Fundamentals of Additive Manufacturing Technologies	3	12	
7	noc21-ge20	Fundamentals of Artificial Intelligence	3	12	
8	noc21-me65	Computer Integrated Manufacturing	3	12	
9	noc21-me67	Industrial Automation and Control	3	12	
10	noc21-cs93	Deep Learning for Computer Vision	3	12	

One Credit Courses:

- It is resolved that the following new one credit courses will be included under Regulations 2016 (Ver 1.0) / R2020 for B.E. Robotics and Automation programme.

List of One Credit Courses planned during academic year 2021-2022:

S.No	Detail of Course	Offered by
1	Robot Operating System (ROS)	RoboAI, Coimbatore
2	Industrial Electrical Panel Design	ADNA Automation, Coimbatore
3	Advanced Industrial Automation	Axis Global Institute of Industrial training, Coimbatore
4	Design and development of robot using micro controllers – programming, interface and design / Basics of Matlab Simulation and programming for robots / Motion Control	Dr.R. Kuppan Chetty, Associate Professor, Senior Member IEEE, Hindustan Institute of Technology and Science.

The above detailed points stated in Item 1 to Item 6 with respect to suggestions/comments from external expert members and university nominee are recorded during the 2nd BoS meeting.

Common Agenda:

- It is resolved that the approved Summer School's / WinterSchool's / GIAN courses conducted by the foreign Universities for a minimum period of 10 days may be considered as equivalent to One Credit Course in the Regulation 2016 (Ver 1.0) / may be considered for credit transfer
- Suggestion by expert members on Regulations, Curriculum, various courses and electives are noted
- The following discussions are taken as one time measure due to the COVID Pandemic.
 1. Classes to be handled online with 5 sessions per day.
 2. End semester examination to be conducted online.
 3. Question Pattern - 70 multiple choice for 70 marks and 15 subjective questions (15 x 2) for 30 marks for 2 hours duration.
- It is resolved that the Question paper setting ratio to be increased to 50% for the internal question paper setters for the end semester examination from 2020-2021 onwards.
- It is resolved that the Valuation Answer Script ratio to be raised to 75% in the end semester examinations from 2020-2021 onwards.
- It is resolved that the following Question Paper pattern is approved for Continuous Assessment Tests.

Course Type	Question Pattern	Marks	Total Marks	Duration
3 / 4 / 2 Credit Courses	7 Multiple choice Questions 3 Fill in the Blanks without Choice 5 Short Answers 3 Descriptive Answers (2 out of 3) + One Compulsory Question	7 Marks 3 Marks 10 Marks 30 Marks	50 Marks	120 Minutes
Design Paper	02 Design Questions (Open Book test)	25 Marks Each	50 Marks	120 Minutes

- It is resolved that the following Question Paper pattern is approved for End Semester Examinations.

Course Type	Question Pattern	Marks	Total Marks	Duration
3 or 4 Credit	7 Objective Questions (MCQ) 3 Fill in the blanks without Choice	7 Marks 3 Marks	100	180 minutes

Course Type	Question Pattern	Marks	Total Marks	Duration
Paper	5 short Answers 5 Descriptive answers (4 out of 6) + One Compulsory Question	15 Marks 75 Marks		
2 Credit Paper & Theory cum Lab papers	5 Multiple choice Questions 5 Short Answers 5 Descriptive Answers (4 out of 6) + One Compulsory Question	5 Marks 15 Marks 50 Marks	70	150 minutes
Design Paper	04 Design Questions (4 out of 5)	25 Marks each	100	180 minutes

- Credit balance for the Readmitted / transferred students (if applicable) – to be included.
- Readmitted / transferred student details (if applicable) – to be included.

R2020

- It is resolved that Regulation 2020 (Learning Outcome based Curriculum through Choice based Credit) will be followed for all B.E./B.Tech. programmes for students admitted in the Academic year 2020 & onwards.
- For candidates admitted under Regulation 2020, the minimum number of credits to be earned for the successful completion of all B.E./B.Tech. programmes for regular candidates is 162 and later entry candidates is 120.
- It is resolved that the curriculum and syllabi under Regulations 2020 be approved for the categories of HS/BS/ES/PC/OE and PE (if any) of B.E Robotics and Automation
- It is resolved that the following new one credit courses will be included under Regulations 2020 for B.E. B.E Robotics and Automation programme. - (if applicable).
- It is resolved that the mandatory courses shall be in the following courses under Regulation 2020

Category	Course Title	
Personality and Character Development	Sports and Games Empowerment through Yoga National Cadet Corps National Service Scheme Youth Red Cross Co-Curricular Activities	Any one Course

Category	Course Title	
	Extra-Curricular Activities Aptitude/Soft Skills	
Allied Skills	English Proficiency Certification Foreign / Vernacular Languages Technical Certification Courses	Any one Course
Additional Courses	- Mandatory courses recommended by the Career Development and Placement Division - Bureau of Overseas Education - Entrepreneur Development Cell	Any one Course

The candidate has to complete one course in each category to be eligible for the award of the degree.

Online Attendance for 2nd BoS Meeting:

Name of the Member	Designation	Signature
Dr.A.Murugarajan	Chairperson	
Dr.B.Vinod	University Nominee	
Dr.K.V.Shriram	Subject Expert	
Mr. PonManivannan	Industry Expert	
Mr. Gautham Ram	Industry Expert	
Mr.Hemanandan	Meritorious Alumni (UG-Mechanical)	
Mr.Ganesh	Chief officer - Industry Institute Interface	
Mr.Vivek Chella	Officer -Industry Institute Interface	
Dr.R.Sudhakar	Department Coordinator (RA)	
Mr.S.Sarveswaran	Faculty Member (RA)	
Mrs.S.Ranjitha	Faculty Member (RA)	
Mr. T. Velmurugan	Faculty Member (Mechanical)	
Mr.S.Kaushik	Faculty Member (EIE)	
Mrs.V.Sangeetha	Faculty Member (ECE)	
Dr.S.Allirani	Faculty Member (EEE)	
Dr.K.Uthayarani	Faculty Member (Physics)	
Dr.L.Raghunath	Faculty Member (Chemistry)	
Dr.R.Anuradha	Faculty Member (CSE)	
Mrs.S.Sangeetha	Faculty Member (Mathematics)	
Dr. David Rathnaraj	Controller of Examinations	



**CHAIRPERSON
BOARD OF STUDIES**

Department of Robotics and Automation



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MINUTES OF THE 1st BOARD OF STUDIES MEETING FOR THE B.E ROBOTICS AND AUTOMATION PROGRAMME HELD ON 22.02.2020 AT 11:00 AM IN THE DEPARTMENT OF ROBOTICS AND AUTOMATION

The following members attended the above meeting.

S.No	MEMBER	CATEGORY
1	Dr.A.Murugarajan HOD - Robotics and Automation	Chairman
2	Dr.B.Vinod HOD - Robotics and Automation Department PSG College of Technology, Coimbatore	University Nominee
3	Dr.K.V.Shriram Associate Professor - Computer Science Engineering Amrita Vishwa Vidyapeetham Deemed University, Coimbatore.	Subject Expert outside the Parent University
4	Mr. PonManivannan Principal Technology Leader, Head – Technology Solutions & Innovation Center, L&T Technology Services, Chennai	Industry Expert
5	Mr. Gautham Ram Director - Craftsman Automation Pvt Ltd, Coimbatore	Industry Expert
6	Mr. Hemanandan (2008 / Mechanical) Design Engineer ELGI Equipments Limited, Coimbatore	Meritorious Alumni (UG-Mechanical)
7	Mr.Ganesh Chief officer - Industry Institute Interface	Special Invitee

8	Dr. David Rathnaraj HOD - Department of Aeronautical Engineering	Controller of Examinations
9	Dr.R.Sudhakar, Associate Professor Department of Robotics and Automation	Department Coordinator (RA)
10	Mr.S.Sarveswaran, Assistant Professor Department of Robotics and Automation	Faculty Member (RA)
11	Mr. T. Velmurugan, Assistant Professor (Sl.G), Department of Mechanical Engineering,	Faculty Member (Mechanical)
12	Mr.S.Kaushik, Assistant Professor (Sr.Gr) Department of Electronics and Instrumentation Engineering	Faculty Member (EIE)
13	Mrs.V.Sangeetha, Assistant Professor (Sr.Gr) Department of Electronics and Communication Engineering	Faculty Member (ECE)
14	Dr.S.Allirani, Associate Professor Department of Electrical and Electronics Engineering	Faculty Member (EEE)
15	Dr.K.Uthayarani, Professor and Head Department of Physics	Faculty Member (Physics)
16	Dr.L.Raghunath, Professor and Head Department of Chemistry	Faculty Member (Chemistry)
17	Dr.R.Anuradha, Associate Professor Department of Computer Science Engineering	Faculty Member (CSE)
18	Mrs.S.Sangeetha , Assistant Professor (Sr.Gr) Department of Mathematics	Faculty Member (Mathematics)

Dr.A. Murugarajan, Chairperson, Board of Studies, chaired the meeting and welcomed all the members to the 1st BoS meeting. After a brief introduction to constitution of various committees and the members in academic committee like Department Advisory Committee, Industry Advisory Board and Programme Alumni Interactive Cell. He gave the overview on history of SREC, programmes offered and outcome based education and the introduction of BE Robotics and Automation in the year 2019. He further presented the Vision and Mission Statement of the College, Vision and Mission Statement of the Department, Program Outcomes (POs), Program Educational Objectives (PEOs) and Program Specific Outcomes (PSOs) along with domain / thrust areas of Robotics and Automation.

The agenda items listed were taken up for discussion and the following resolutions were passed.

1. Distribution of Credits in various regulations
2. Regulations 2016
3. Proposed Curriculum for 8 semesters
4. Detailed Syllabi (R2016 regulations) - 3rd and 4th Semester
5. Regulations 2020
6. Proposed Curriculum for 8 semesters
7. Detailed Syllabi (R2020 regulations) – 1st and 2nd Semester
8. Proposed Programme Specific Laboratories
9. One Credit Courses
10. Proposed Liberal Arts Courses in R2020 regulations

Suggestions offered for Detailed Syllabi (R2016 regulations) - 3rd and 4th Semester is stated in Item no.1 to Item no.7

ITEM No.1: Electrical Machines and Industrial Drives Course offered in 3rd semester

- Vinod suggested to include Power Electronics and Drives as separate course
- PonManivannan suggested to include more advanced content in drive control electronics. The Drives content is not clear and it has to be revisited. The topics like usage of servo drives in the real-time applications and algorithms related to drives can be included.
- All the members suggested to have a separate course on electrical machines & power systems and power electronics and drives.
- Gautham Drive suggested to include direct drive systems as they are directly coupled to the applications.

ITEM No.2: CNC machines and Metrology offered in 3rd semester

- Gautham Ram gave the suggestion that too much content is given in the course. Covering of syllabus in 45 hours is questioned. The topics like CNC machines interfaced with Robot for loading and unloading tasks along with work holding devices can be included.
- Fixture design and Chuck configuration relating to robot gripper loading and unloading, opening and closing of the gripper can be included.
- Vinod gave suggestion that CNC machines and Metrology is too early to learn in the curriculum. NITU is offering 6 months course on CNC machines and programming.

- Vinod suggested to include communication protocols, parameterisation and Diagnosis for CNC machines.
- Vinod also suggested to offer CNC machines and Metrology course in 4th semester and offer Fluid Power Automation course in 3rd semester.
- In CNC machine tools, last paragraph (Machine building, structural details, configuration and design, guide ways – Friction, Anti friction and other types of guide ways) has to be removed.
- “Interfacing of CNC machine tools with IOT tools” has to be removed. As IOT in 3rd semester is too early to learn. Simple Case Studies can be included.
- Course outcome (CO2) has to be changed.

ITEM No.3: Automation Control Systems Laboratory offered in 3rd semester

- Gautham Ram suggested to have an experiment related to Control Panel design
- The students must know the basics of types of wires, wire selection, design of wiring connections, equivalent software for analyzing the wire connections, Control Panel Design and Selection, Best practices in electrical applications (Crimping, Surge Test, Current Leak Tests etc. related to quality (C) certification required for selling of Control Panels)
- PonManivannan suggested to have exposure on wire harness testing tools, low and high voltage problems in installation along with best practices in installation of equipment's.

ITEM No.4: Mini Project – I offered in 3rd and 4th semesters

- Shriram suggested to provide problem statements given in Hackathon and other events, so that students can actively create and develop the concepts based on industrial needs.

ITEM No.5: Economics and Cost Analysis offered in 4th semester

- The contents given in 1st module has to be revisited.
- PonManivannan suggested to include cost benefit analysis, sizing, selection, make or buy decision
- Gautham Ram suggested to include Return on Investment, Payback period, Return on Capital considering the long-term benefits of the investment.

- Calculation of recurring cost, residual value (depreciation), machine hour rate has to be included
- PonManivannan also suggested to have social responsibility and ethics considerations before implementation of automation in the industries. The automation is required only for hazardous and other difficult environments
- All the members commonly suggested to have one module on Project Management to analyze the commercial / technical feasibility before implementation of any projects.
- All the members provided the perspective that mini projects can be carried out in informal manner related to cost. Whereas, Main Project in Final year should be in formal manner considering the Project Management aspects.
- The Course Title can be changed as “Feasibility Study and Cost Analysis”.

ITEM No.6: Robot Kinematics and Dynamics offered in 3rd and 4th semesters respectively

- Vinod Suggested to include parallel kinematic robotic system analysis in the curriculum.

ITEM No.7: Digital Manufacturing offered in 4th semester

- Subtractive manufacturing topic has to be removed in advanced manufacturing concepts module.

Suggestions offered for Detailed Syllabi (R2020 regulations) – 1st and 2nd Semester is stated in Item no.8 to Item no.12

ITEM No.8: Sensor Technology / Sensors for Automation offered in 1st semester

- Gautham Ram suggested to include sensors working principle in 1st module.
- PonManivannan suggested to have the course title as “Sensors in Automation”.

ITEM No.9: Mathematics Papers offered in 1st and 2nd semester

- All the members suggested to include quadratic equations in the curriculum since it is more relevant to robotics.
- Gautham Ram asked about the need of mathematics paper in industry requirement. Other members suggested that it is required for higher studies and for research analysis.

ITEM No.10: Engineering Materials offered in 1st semester

- All the members suggested to have the course title as “Advanced Materials” instead of Engineering Materials.

ITEM No.11: Manufacturing System Automation offered in 2nd semester

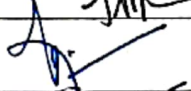
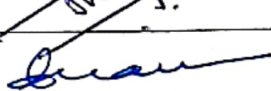
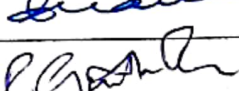
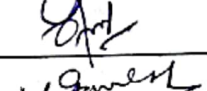
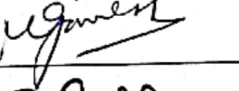
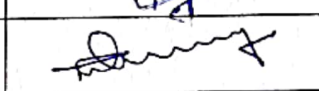
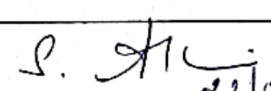
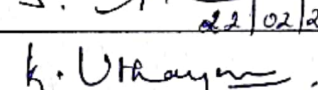
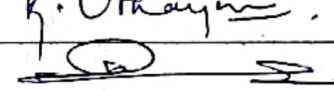
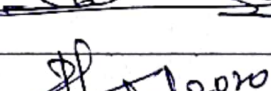
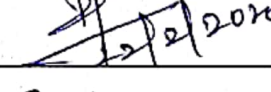
- The content given in module Industry 4.0 (Robots: Classification of robots- Specifications of robot. Basic components of robotic system - terminology- - Applications of Robot) has to be removed.
- Shriram suggested to include basics of NFC (Near Field Communication)

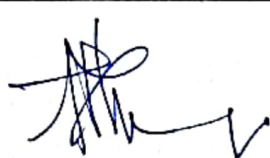
ITEM No.12: Programming Foundations offered in 2nd semester

- Shriram suggested to include memory management (static and memory allocation) in programming. He also suggested to follow GCC pattern in teaching the C programming.

Suggestions/Comments from External Expert Members and University Nominee:

1. Vinod, University Nominee suggested to have only one or two books as Text Books and can have 4 to 5 Reference Books
2. Vinod, University Nominee also asked clarification regarding no. of course outcomes in theory and practical courses. It is clarified that course outcomes will vary from 3 to 6
3. All the members suggested to include Robot related software tools rather than using Matlab and LabVIEW softwares in the courses. (example: RoboDK software)
4. All the members suggested to provide Electrical Workshop for robotic students.
5. All the members expressed their views that Robot Process Automation is non-manufacturing process automation (Business Process Automation). The Course on Robot Process Automation is irrelevant to the programme Robotics and Automation.
6. All the members suggested to include soft skills particularly in Non-Verbal Communication. The students are assigned with situations and asked to prepare the written document (business letter writing and email communication)
7. All the members agreed to have design thinking course offered by the industry people with the contents relevant to best industry practices.

Name of the Member	Designation	Signature
Dr.A.Murugarajan	Chairperson	
Dr.B.Vinod	University Nominee	
Dr.K.V.Shriram	Subject Expert	
Mr. PonManivannan	Industry Expert	
Mr. Gautham Ram	Industry Expert	
Mr.Hemanandan	Meritorious Alumni (UG-Mechanical)	
Mr.Ganesh	Chief officer -Industry Institute Interface	
Dr.R.Sudhakar	Department Coordinator (RA)	
Mr.S.Sarveswaran	Faculty Member (RA)	
Mr. T. Velmurugan	Faculty Member (Mechanical)	
Mr.S.Kaushik	Faculty Member(EIE)	
Mrs.V.Sangeetha	Faculty Member (ECE)	
Dr.S.Allirani	Faculty Member (EEE)	 22/02/2020
Dr.K.Uthayarani	Faculty Member (Physics)	
Dr.L.Raghunath	Faculty Member (Chemistry)	
Dr.R.Anuradha	Faculty Member (CSE)	 22/2/2020
Mrs.S.Sangeetha	Faculty Member (Mathematics)	 22/2/2020
Dr. David Rathnaraj	Controller of Examinations	-


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