AALIM MUHAMMED SALEGH COLLEGE OF ENGINEERING

IAF-AVADI, CHENNAI - 55

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CIRCULAR

AMSCE/EEE/CIR/VAC/001/2018-19 Date: 06.07.2018

The Department of Electrical and Electronics Engineering plans to conduct a Value Added Course on **ROBOTICS LEVEL 1** by **Ms. S. Tamilselvi**, Design Engineer, M/S **Chase Technologies**, for the benefit of II Year students. This course is scheduled from 10.07.2018 to 13.07.2018 **(09:00 AM to 5:30 PM)** for 4 days (30 Hrs).

All the students must attend all the classes with a minimum of 75% attendance and score 50% on the quiz. Students who complete the course successfully will receive certificates.

06/07/18

HOD/EEE

Copy To:

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Circulate to all faculty members and Students
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REPORT FOR THE VALUE ADDED COURSE

Course Name : **ROBOTICS LEVEL 1**
Resource Person : **Ms. S. Tamilselvi**, Design Engineer, M/S **Chase Technologies**

Date : **10.07.2018 to 13.07.2018**
Time : **09.00 A.M to 05.30 P.M**
Course Hours : **30 Hours**
Attended Student : **31** Students
Student Certified : **31** Students

1. Course Overview:

The 30-hour "Robotics Level 1" course aimed to introduce students to the fundamental concepts and hands-on applications of robotics. The course was designed to provide participants with the foundational knowledge of robotics, including basic robotic components, programming principles, and the integration of mechanical and electrical systems to create functioning robots.

2. Course Objectives:

- To familiarize students with the basic concepts of robotics, including the types and components of robots.
- To introduce students to the fundamentals of robotics programming.
- To build hands-on skills in constructing and programming simple robots.
- To help students understand the interdisciplinary nature of robotics, integrating concepts from mechanical engineering, electronics, and computer science.
- To encourage problem-solving and creative thinking through practical projects and tasks.

3. Course Structure:

The course was structured over a series of 10 sessions, each lasting 3 hours, covering both theoretical and practical aspects of robotics. The content was divided as follows:

Module 1: Introduction to Robotics

Module 2: Understanding Robotics Components

Module 3: Basic Robotics Programming

Module 4: Designing and Building Robots

Module 5: Testing, Troubleshooting, and Optimization

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Module 6: Mini Project and Demonstration

4. Learning Outcomes:

By the end of the course, participants were able to:

- Understand the basic principles of robotics and the role of various components in a robot.
- Build simple robots from scratch using available kits and tools.
- Write basic code to control the robot's movement and functionality.
- Troubleshoot and optimize robots for better performance.
- Demonstrate teamwork and problem-solving skills through group projects and presentations.

5. Teaching Methodology:

- **Lectures**: Interactive lectures for theoretical knowledge.
- **Hands-on Activities**: Practical, project-based learning where students built and programmed robots.
- **Group Work**: Collaborative tasks to encourage teamwork and shared problem-solving.
- **Assessment**: Periodic quizzes and a final project for hands-on assessment.

6. Tools and Resources Used:

- Arduino microcontroller kits
- Lego Mindstorms or VEX Robotics kits (depending on availability)
- Robotics simulation software (TinkerCAD, VEXcode)
- Computers with necessary software installed (Arduino IDE, Python, etc.)
- Breadboards, sensors (IR, ultrasonic, light), motors, wheels, and other components.

7. Participant Feedback:

The feedback from participants was overwhelmingly positive. Some key takeaways from the survey conducted at the end of the course include:

- **Hands-on experience** was the most appreciated aspect of the course.
- Students found the **step-by-step breakdown of robotics components** and their functions very helpful.
- The **interactive learning approach** allowed participants to better understand theoretical concepts through real-world applications.
- A few participants expressed a desire for more advanced programming topics and projects to further hone their skills.

13/07/18

COURSE-COORDINATOR

13/07/18

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Organize

Value Added Course on

"ROBOTICS LEVEL-1"

Course Details:

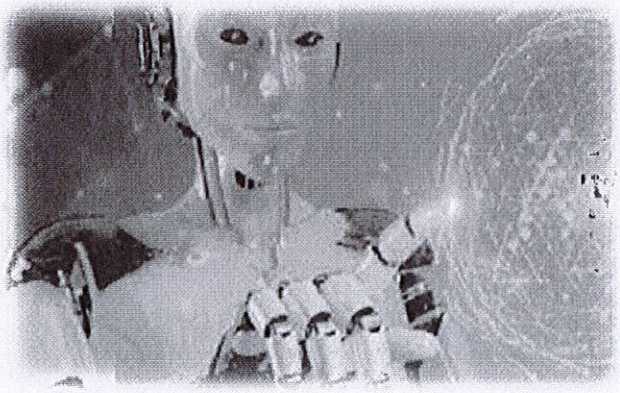
Duration: 30 Hrs

Course start from 10.07.2018 to 13.07.2018

Venue: Power System Simulation Laboratory, EEE Block

Resourse Person: Ms.Tamil Selvi

Design Engineer, Chase Technologies



A.MOHANASUNDARAM
HEAD/EEE

Dr.AFZAL ALI BAIG M
PRINCIPAL

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AALIM MUHAMMED SALEGH
COLLEGE OF ENGINEERING

From

Mr. A.Yuvaraj
Assistant Professor,
Department of Electrical and Electronics Engineering,
Aalim Muhammed Salegh College of Engineering,
Muthapudupet, Avadi IAF,
Chennai – 600055.

To

The Principal,
Aalim Muhammed Salegh College of Engineering,
Muthapudupet, Avadi IAF,
Chennai – 600055.

Dear Sir,

Sub: Request for Approval of Value-Added Course: Robotics Level 1 – reg.

I am writing to request your approval for the value-added course titled "Robotics Level 1 " for II year EEE students from 10.07.2018 – 13.07.2018. I believe that the course will enhance the skills and competencies of our students. Given the growing interest and relevance of this subject, I believe that offering this course would greatly benefit our students' educational experience and equip them with valuable skills. Kindly consider the request and do the needful.

Submitted to principal Sir

Yours faithfully,

A Yuva 30/6/18

Sir, Kindly permit us to conduct this Value added course in the field of Robotics for the II year EEE Students to enchance their Skill level.

30/06/18

A. MOHANASUNDARAM, HEAD/EEE

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PRINCIPAL
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Permitted

30/6/2018

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SYLLABUS FOR THE VALUE ADDED COURSE ROBOTICS LEVEL 1

MODULE 1: Introduction to Robotics

- Overview of robotics: history, applications, and future trends.
- Introduction to basic components of robots: sensors, actuators, and controllers.
- Understanding control systems and their role in robotics.
- Introduction to the Arduino microcontroller and its applications.

Activities:

- Hands-on session with Arduino: setting up the environment.
- Simple programming exercises using Arduino IDE.

MODULE 2: Motor Control and Programming

- Motor types and their control (DC motors, servo motors).
- PWM (Pulse Width Modulation) concepts for motor control.
- Integrating Arduino with an L298N motor driver for controlling motor movements.

Activities:

- Practical project: Create a basic robot that can move in different directions using motor control.
- Programming challenge: Write functions to control robot movement.

MODULE 3: Sensor Integration and Application Development

- Introduction to various sensors (ultrasonic, infrared) and their applications.
- How to interface sensors with Arduino.
- Building an obstacle-avoiding robot using ultrasonic sensors.

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Activities:

- Hands-on project: Assemble a robot that can detect and avoid obstacles.
- Group challenge to improve the robot's obstacle avoidance capabilities.

MODULE 4: Advanced Topics with Jetson Nano

- Introduction to Jetson Nano and its capabilities for robotics.
- Installing Jetbot OS and basic system configuration.
- Basics of Python programming for robotics applications.
- Serial communication between Jetson Nano and Arduino.

Activities:

- Practical session on flashing Jetbot OS onto an SD card and booting the system.
- Project: Develop a simple application that uses both Jetson Nano and Arduino for robotic control.

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COURSE-COORDINATOR

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SCHEDULE FOR THE VALUE ADDED COURSE ROBOTICS LEVEL 1

Day 1: 10.07.2018

Introduction to Robotics (7.5 hours)

FN : 09.00 AM - 12.30 PM

- Overview of robotics: history, applications, and future trends.
- Introduction to basic components of robots: sensors, actuators, and controllers.
- Understanding control systems and their role in robotics.
- Introduction to the Arduino microcontroller and its applications.

Activities:

AN : 01.30 PM - 05.30 PM

- Hands-on session with Arduino: setting up the environment.
- Simple programming exercises using Arduino IDE.

Day 2: 11.07.2018

Motor Control and Programming (7.5 hours)

FN : 09.00 AM - 12.30 PM

- Motor types and their control (DC motors, servo motors).
- PWM (Pulse Width Modulation) concepts for motor control.
- Integrating Arduino with an L298N motor driver for controlling motor movements.

Activities:

AN : 01.30 PM - 05.30 PM

- Create a basic robot that can move in different directions using motor control.
- Programming challenge: Write functions to control robot movement.

Day 3: 12.07.2018

Sensor Integration and Application Development (7.5 hours)

FN : 09.00 AM - 12.30 PM

- Introduction to various sensors (ultrasonic, infrared) and their applications.
- How to interface sensors with Arduino.
- Building an obstacle-avoiding robot using ultrasonic sensors.

Activities:

AN : 01.30 PM - 05.30 PM

- Hands-on project: Assemble a robot that can detect and avoid obstacles.
- Group challenge to improve the robot's obstacle avoidance capabilities.

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Day 4: 13.07.2018

Advanced Topics with Jetson Nano (7.5 hours)

FN : 09.00 AM - 12.30 PM

- Introduction to Jetson Nano and its capabilities for robotics.
- Installing Jetbot OS and basic system configuration.
- Basics of Python programming for robotics applications.
- Serial communication between Jetson Nano and Arduino.

Activities:

AN : 01.30 PM - 05.30 PM

- Practical session on flashing Jetbot OS onto an SD card and booting the system.
- Project: Develop a simple application that uses both Jetson Nano and Arduino for robotic control.

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Certifate course on Robotics Level - 1

Academic year- 2018-2019

BATCH: 2017-2021 **YEAR: II**

S.No	Reg. no	NAME	10.7.18	11.7.18	12.7.18	13.7.18
1	110117105001	ABDUL JASUDEEN N				
2	110117105003	FAIZAL M				
3	110117105005	HANIF ADHITHAN N A				
4	110117105006	HASSAN IMRAN.M.				
5	110117105007	IJAJ AHAMED.S				
6	110117105008	JAVITH AHAMED.M				
7	110117105009	KALKIRAM.G				
8	110117105010	MEERAN OLI.K				
9	110117105011	MOHAMED ADNAN FARID.S.				
10	110117105012	MOHAMED ALI RAZEEN M S				
11	110117105013	MOHAMED ARSHAD JAMEEL				
12	110117105015	MOHAMED AZARUDEEN				
13	110117105016	MOHAMED FAARIS.M				
14	110117105018	MOHAMED INZAMAM.A				
15	110117105019	MOHAMED OWAISH S				
16	110117105020	MOHAMED SULAIMAN.S.				
17	110117105021	MOHAMED THARIQUE				
18	110117105023	MOHAMMED SHAIK SIMAR.K.M.				
19	110117105024	MOHAMMED THAUQHEER KHAN.A				
20	110117105025	MUJAHIDEEN AHAMED B				
21	110117105027	RIYAS .P				
22	110117105028	SAHUL HAMEED V				
23	110117105029	SYED AZEEM.S				
24	110117105030	SYED THARIQ A				
25	110117105301	AHAMED NOWFAL				
26	110117105302	AJKAR ALI.A				
27	110117105305	PREETHI JENIFER.M				
28	110117105306	PUSHPA GOMATHI.M				
29	110117105307	SARAVANAN.S				
30	110117105308	YUVARAJ.S				
31	110117105701	MUTHAMMAD IFTHIKAR M				

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29/7/18

HEAD
Electrical & Electronics Engg.
Aalim Muhammed Salegh
College of Engineering

A. NAGARAJAN HEAD/EEE

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CHASE TECHNOLOGIES

Chase Technologies

R&D-Manager

Date: 13-07-2018

CERTIFICATE OF COMPLETION

This certificate is awarded to KALKIRAM.G for successfully completing the course **Robotics Level - 1** from 10th July 2018 to 13th July 2018.

Manager-R&D Wing

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Chase Technologies

R&D-Manager

Date: 13-07-2018

CERTIFICATE OF COMPLETION

This certificate is awarded to MOHAMED AZARUDEEN for successfully completing the course **Robotics Level - 1** from 10th July 2018 to 13th July 2018.

Manager-R&D Wing

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CHASE TECHNOLOGIES

Chase Technologies

R&D-Manager

Date: 13-07-2018

CERTIFICATE OF COMPLETION

This certificate is awarded to MOHAMED THARIQUE for successfully completing the course **Robotics Level - 1** from 10th July 2018 to 13th July 2018.

Manager-R&D Wing

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Chase Technologies

R&D-Manager

Date: 13-07-2018

CERTIFICATE OF COMPLETION

This certificate is awarded to SAHUL HAMEED V for successfully completing the course **Robotics Level - 1** from 10th July 2018 to 13th July 2018.

Manager-R&D Wing

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Chase Technologies

R&D-Manager

Date: 13-07-2018

CERTIFICATE OF COMPLETION

This certificate is awarded to PREETHI JENIFER.M for successfully completing the course **Robotics Level - 1** from 10th July 2018 to 13th July 2018.

Manager-R&D Wing

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