

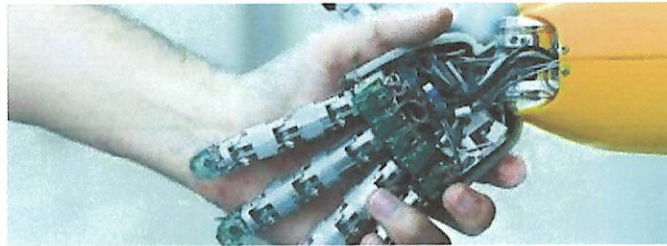
DEPARTMENT OF PHYSICS
SACRED HEART COLLEGE (AUTONOMOUS), THEVARA



VALUE ADDED COURSE ON

ROBOTICS AND AUTOMATION- 2018-19

Course Code: 18PHYVAC01



Gesture control robot



Gas leakage detector

DURATION: 30 Hours

VENUE: DEPARTMENT OF PHYSICS

IN COLLABORATION WITH DSC ROBOTICS ACEDAMY



ALL ARE COORDIALY INVITED

**VALUE ADDED COURSE ON
ROBOTICS AND AUTOMATION**

Duration: 30 Hours
Time: 3:30 - 5 pm

Venue: Department of Physics

OBJECTIVE

At our Robotics course, students learn the fundamentals of building a wide variety of robots. By learning important principals, students acquire the ability to create robots from their imagination. Students also learn to how to program robots to move and use sensors, control their robots using remote control capabilities and work in teams. This course is a combination of Electronics, Computer Science and Mathematics.

OUTCOME

After completion of the course the students will be specialized in Embedded System design using Arduino. When you finish the course and complete the hands on project, you'll earn a Certificate that you can share with prospective employers and your professional network.

COURSE DETAILS

- 30 Hours of classes and hands on training.
- Classes of 1:30 Hours are scheduled once or twice in a week.
- Students will be provided the robotic kits.
- Total fees
- Venue – Department of Physics, Sacred Heart College

ADMINISTRATION

Convener:

Course in Charge:

Organizing Committee:

VALUE ADDED COURSE ON

ROBOTICS AND AUTOMATION

COURSE SCHEDULE and SYLLABUS – 18PHYVAC01


Date	Unit	Topics
	Basic Electronics and Robotics	<ul style="list-style-type: none"> • Introduction to Electronics and Emergency Lamp • Introduction to Robotics Basic electronic knowledge • Understanding Bread Board connection
	Understanding Parallel connection over series connection	<ul style="list-style-type: none"> • To differentiate series and parallel connection • Advantage of series connection over parallel connection • Identifying the connection used in house hold circuits
	Understanding Digital I/O pins of Arduino	<ul style="list-style-type: none"> • • Introduction • Difference between microprocessors and controllers • Introduction to Arduino and mBlock • Pin Mapping • Lab: Flashing LED • Basic programming using Arduino and mBlock. • Blinking LED setting a delay
	Active and Passive devices	<ul style="list-style-type: none"> • Role of capacitors in electrical circuit • Making a slow dimming lamp • Charging and discharging of capacitors
	Automatic Street Light and Traffic Light System	<ul style="list-style-type: none"> • To learn about LDR and Parallel sequencing

		<ul style="list-style-type: none"> • Street light system using LDR o Implements LDR and parallel sequencing
	Semiconductor Electronics	<ul style="list-style-type: none"> • Transistor used as switch • Forward and reverse biasing • Transistor as an amplifier
	Assessment - Decoration Light. Digital Electronics	<ul style="list-style-type: none"> • Integrated Circuit- introduction • Activity on blinking LED using 555 Timer IC • Working of 555 Timer IC
	Button controlled Arduino Lamp and POT (Potentiometer) controlled lamp	<p>Understanding digital pins of</p> <ul style="list-style-type: none"> • Arduino <p>Understanding analog input to</p> <ul style="list-style-type: none"> • Arduino
	To make an Arduino car	<ul style="list-style-type: none"> • • Uses two DC control shield Moves automatically in a specified path
	Equalizer	<ul style="list-style-type: none"> • Programming Sound sensor • LED's turn On /off with the play of sound
	Assessment - Arduino Car with automatic headlight	
	Robotic Elbow	<ul style="list-style-type: none"> • To learn types of motors - DC motor and servomotor • Robotic Arm Using two types of motors • Understanding differences in programming the motors
	Monitoring Robot	<ul style="list-style-type: none"> • Introduction to Ultrasonic sensor • Making a monitoring robot for security purpose

	Object following Robot	<ul style="list-style-type: none"> • Making an Arduino car and program it to work as a following Robot
	Arduino Dice	<ul style="list-style-type: none"> • Introduction to seven segment display

		<ul style="list-style-type: none"> • Display numbers in seven segment display using Arduino board
	Voting Machine	<ul style="list-style-type: none"> • Introduction to serial communication • Uploading program to Arduino and obtain the result in serial monitor
	LCD Display	<ul style="list-style-type: none"> • To make a notice board using LCD • Programming the LCD in arduino to get the desired text in the LCD cre
	Assessment - making an automatic keyboard Scratch	<ul style="list-style-type: none"> • Introduction to scratch Developing a game using scratch
	Online programming	<ul style="list-style-type: none"> • Introduction to touch sensor • Developing serial communication using Arduino between arduino and computer
	Distance calculator Robot	<ul style="list-style-type: none"> • Display sensor values in LCD as well as in serial monitor • Program me for displaying the distance in LCD
	PIR and Relay	<ul style="list-style-type: none"> • Introduction to PIR and Relay • Effect of motion on PIR based motion detector

	Smoke fighter Robot	<ul style="list-style-type: none"> • Introduction to MQ-2 smoke sensor • Program the robot to move in a specified path and detect smoke and remove it
	Assessment Obstacle detecting Robot	
	Line following Robot	<ul style="list-style-type: none"> • Introducing IR sensor • Program the robot to move through the particular line
	Home Automation	<ul style="list-style-type: none"> • Introducing Bluetooth module • Automatic control the light with mobile phone
	Soil moisture detecting Robot	<ul style="list-style-type: none"> • Monitor the moisture content of the soil • Obtain the values in both analog and digital mode
	Voltmeter	<ul style="list-style-type: none"> • Introducing equation in program • Making a digital voltmeter and ammeter and measure the voltage
	Mp3 player using arduino	<ul style="list-style-type: none"> • Introduction of WVTDO-20 Sd module and its connection • AD4 encoding
	Wireless door bell System	<ul style="list-style-type: none"> • Making a wireless door bell through Arduino programming
	Final Assessment	


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