# St. Michael's College, Cherthala

Alappuzha, Kerala-688 539
Affiliated to University of Kerala
and Re-accredited by NAAC with 'A' Grade


## ADD ON COURSE 2019-20

**Name of the Programme : ROBOTICS**

**Name of the Department : PHYSICS**

**Course Code : PY 092**

# St. Michael's College

**MAYITHARA P.O., CHERTHALA, ALAPPUZHA-688539**

An institution with Minority Status Affiliated to the University of Kerala and Re-accredited by NAAC with 'A' Grade

## Add on Course - 2019-20

**COMMERCE**
Basic Corporate Accountant Program

**MATHEMATICS**
Introduction to Mathematical thinking

**SOFTWARE DEVELOPMENT**
Basics of AI

**PHYSICS**
Robotics

**ENGLISH**
Business Benchmark

**ENGLISH**
Certificate Course
Remedial Grammar and Public Speaking

**TOURISM STUDIES**
Customer Service Management

**CHEMISTRY**
Green Chemistry and Environmental Sustainability

Phone : 0478-2822387, 2810387
Email : michaelscherthala@gmail.com, Web : www.stmc.ac.in

**NAME OF COURSE : ROBOTICS**

**COURSE CODE : PY 092**

**NO OF STUDENTS ENROLLED : 29**

## CONTENTS

Syllabus

**(i) INTRODUCTION**

Introduction to Embedded System, Basics of electronics, Basics of communication, Digital electronics Embedded Systems Concepts, languages used for developing Intro to Microprocessor & Microcontroller Intro to peripherals

**(ii) Electronic / Hardware Components**

Resistors, Capacitors, Diodes Regulators, Switches, Connectors Transistors, Different ic families, Transformers, Wires and cables Soldering practice Practical hands on general PCB, bread board

**(iii) Microcontroller ARDUINO –**

ATMEGA 328 Introduction to IDE Configuration of I/O Ports and Its Registers LCD Interfacing, Serial communication (USART Module) GSM modem interfacing with USART Timer/counter, ADC Capture, Compare, PWM Interrupts Handling Protocol: I2C RTC , EEPROM Motors DC motors Servo motor

**(iv) Sensors**: ultrasonic sensors, Hall magnetic sensor module, Key switch module, Infrared emission sensor module, Laser sensor module, Small passive buzzer module, 3-color full-color LED SMD modules, Photo interrupter module, 2-color LED module, Temperature and humidity sensor module, Photo resistor module, 5V relay module Tilt switch module, Mini magnetic reed modules, Infrared sensor receiver module, XY-axis joystick module, Linear magnetic Hall sensors

Robotics

# Time Table

Month : September Time 3.30 pm- 4.30 pm

| Date | 18/09/2019 | 19/09/2019 | 25/09/2019 | 26/09/2019 |
|---|---|---|---|---|
| Topic | Introduction to Embedded System | Introduction to Embedded System | Introduction to Embedded System | Introduction to Embedded System |

Month : October Time 3.30 pm- 4.30 pm

| Date | 02/10/2019 | 03/10/2019 | 09/10/2019 | 16/09/2019 | 17/10/2019 | 23/10/2019 | 24/10/2019 | 30/10/2019 | 31/10/2019 |
|---|---|---|---|---|---|---|---|---|---|
| Topic | Basics of electronics | Basics of electronics | Basics of communication | Digital electronics Embedded Systems Concepts | languages used for developing Intro to Microprocessor & Microcontroller Intro to peripherals | | | | |

Month : November Time 3.30 pm- 4.30 pm

| Date | 06/11/2019 | 07/11/2019 | 13/11/2019 | 14/11/2019 | 20/11/2019 | 21/11/2019 | 27/11/2019 | 28/11/2019 |
|---|---|---|---|---|---|---|---|---|
| Topic | Resistors, Capacitors | Diodes Regulators | Switches | Connectors Transistors | Different ic families | | | |

Month : December Time 3.30 pm- 4.30 pm

| Date | 04/12/2019 | 05/12/2019 | 11/12/2019 | 12/12/2019 | 18/12/2019 | 19/12/2019 |
|---|---|---|---|---|---|---|
| Topic | Transformers | Wires and cables Soldering practice Practical hands on general PCB, bread board | | | | |

Month : January Time 3.30 pm- 4.30 pm

| Date | 08/01/2020 | 09/01/2020 | 15/01/2020 | 16/01/2020 | 22/01/2020 | 23/01/2020 | 29/01/2020 | 30/01/2020 |
|---|---|---|---|---|---|---|---|---|
| Topic | ATMEGA 328 Introduction to IDE Configuration of I/O Ports and Its Registers LCD Interfacing | Serial communication (USART Module) GSM modem interfacing with USART Timer/counter | ADC Capture, Compare | PWM Interrupts Handling Protocol: I2C RTC , EEPROM Motors DC motors Servo motor | | | | |

Month : February Time 3.30 pm- 4.30 pm

| Date | 05/02/2020 | 06/02/2020 | 12/02/2020 | 13/02/2019 | 19/02/2020 | 20/02/2020 |
|---|---|---|---|---|---|---|
| Topic | ultrasonic sensors | Hall magnetic sensor module, Key switch module, Infrared emission sensor module, Laser sensor module, Small passive buzzer module | 3-color full-color LED SMD modules, Photo interrupter module, 2-color LED module | Temperature and humidity sensor module, Photo resistor module, 5V relay module Tilt switch module | Mini magnetic reed modules, Infrared sensor receiver module | XY-axis joystick module, Linear magnetic Hall sensors |

# 2019-2020 Add on course on Robotics

## ATTENDANCE

| Sl No | Candidate code | Name of candidate | Attendance % |
|---|---|---|---|
| 1. | **23017136001** | ABIN KUMAR V.S. | 78 |
| 2. | **23017136002** | ANANTHAKRISHNAN R | 91.00 |
| 3. | **23017136003** | ANJANA S | 75.00 |
| 4. | **23017136005** | ASWATHI R | 75.00 |
| 5. | **23017136006** | ASWATHY B NAIR | 93.00 |
| 6. | **23017136009** | INDHUJA S | 75.00 |
| 7. | **23017136012** | NAWRA PARVEEN S | 75.00 |
| 8. | **23017136013** | SALMAN SIRAJ | 97.00 |
| 9. | **23017136016** | SUNAINA SALIM | 75.00 |
| 10. | **23017136017** | ANJALI M | 75.00 |
| 11 | **23017136026** | NIMISHA NIKKADEMOSE | 85.00 |
| 12. | **23017136027** | SEBESTEENA XAVIER | 87.00 |
| 13 | **23018136004** | AMRUTHLAL | 75.00 |
| 14 | **23018136008** | ARCHANA .R | 78.00 |
| 15 | **23018136011** | DELEENA LINET ANTONY | 83.00 |
| 16. | **23018136017** | SAIRAJ D | 79.00 |
| 17. | **23018136021** | VISMAYA ANTONY | 81.00 |
| 18. | **23018136023** | AMAL GIREESH | 89.00 |
| 19. | **23018136024** | ANAKHA AJAY | 75.00 |
| 20 | **23018136025** | ATHIRA. S | 78.00 |

| | | | |
|---|---|---|---|
| 21. | **23018136026** | AYANA AJAY | 83.00 |
| 22. | **23018136027** | FEBIN PETER | 79.00 |
| 23 | **23019136002** | AERNEST J GEORGE | 81.00 |
| 24 | **23019136003** | AJAY IMMANUEL P J | 89.00 |
| 25 | **23019136005** | ALENPAUL JACOB | 75.00 |
| 26 | **23019136006** | ARATHY H | 85.00 |
| 27 | **23019136008** | BHAVIKA BABU | 75.00 |
| 28. | **23019136016** | ABHISURYA P PANKAJ | 90.00 |
| 29. | **23019136025** | SRUTHY S | 85.00 |

# St Michael's College, Cherthala

## Add on course Examination_

March 2020

**Time: 1 hr** **Total marks 25**

### Section A (Answer all questions. Each question carries 1 mark)

1. Differentiate between passive and active components
2. What is a micro computer?
3. Define microprocessor
4. What is a register in microprocessor?
5. Symbolize a diode

### Section B (Answer all questions. Each question carries 4 marks)

6. What is the significance of using transformers in a circuit?
7. What is ADC Capture?
8. What are ultrasonic sensors?
9. What is a Photo interrupter module?
10. Explain Temperature and humidity sensor module.

Xxxxxxxxx

**MARKLIST**

| Sl No | | Name of candidate | Marks (25) | Remarks |
|---|---|---|---|---|
| 1. | **23017136001** | ABIN KUMAR V.S. | 18 | Passed |
| 2. | **23017136002** | ANANTHAKRISHNAN R | 20 | Passed |
| 3. | **23017136003** | ANJANA S | 21 | Passed |
| 4. | **23017136005** | ASWATHI R | 23 | Passed |
| 5. | **23017136006** | ASWATHY B NAIR | 22 | Passed |
| 6. | **23017136009** | INDHUJA S | 17 | Passed |
| 7. | **23017136012** | NAWRA PARVEEN S | 20 | Passed |
| 8. | **23017136013** | SALMAN SIRAJ | 23 | Passed |
| 9. | **23017136016** | SUNAINA SALIM | 23 | Passed |
| 10. | **23017136017** | ANJALI M | 17 | Passed |
| 11 | **23017136026** | NIMISHA NIKKADEMOSE | 17 | Passed |
| 12. | **23017136027** | SEBESTEENA XAVIER | 16 | Passed |
| 13 | **23018136004** | AMRUTHLAL | 16 | Passed |
| 14 | **23018136008** | ARCHANA .R | 16 | Passed |
| 15 | **23018136011** | DELEENA LINET ANTONY | 14 | Passed |
| 16. | **23018136017** | SAIRAJ D | 15 | Passed |
| 17. | **23018136021** | VISMAYA ANTONY | 17 | Passed |
| 18. | **23018136023** | AMAL GIREESH | 18 | Passed |
| 19. | **23018136024** | ANAKHA AJAY | 23 | Passed |
| 20 | **23018136025** | ATHIRA. S | 21 | Passed |
| 21. | **23018136026** | AYANA AJAY | 24 | Passed |
| 22. | **23018136027** | FEBIN PETER | 24 | Passed |
| 23 | **23019136002** | AERNEST J GEORGE | 14 | Passed |
| 24 | **23019136003** | AJAY IMMANUEL P J | 13 | Passed |
| 25 | **23019136005** | ALENPAUL JACOB | 16 | Passed |
| 26 | **23019136006** | ARATHY H | 17 | Passed |
| 27 | **23019136008** | BHAVIKA BABU | 19 | Passed |
| 28. | **23019136016** | ABHISURYA P PANKAJ | 20 | Passed |
| 29. | **23019136025** | SRUTHY S | 22 | Passed |

## ST. MICHAEL'S COLLEGE

**CHERTHALA, ALAPPUZHA - 688 539**

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# ADD-ON COURSE

# CERTIFICATE

*This is to certify that* Miss. INDHUJA S (23017136009)

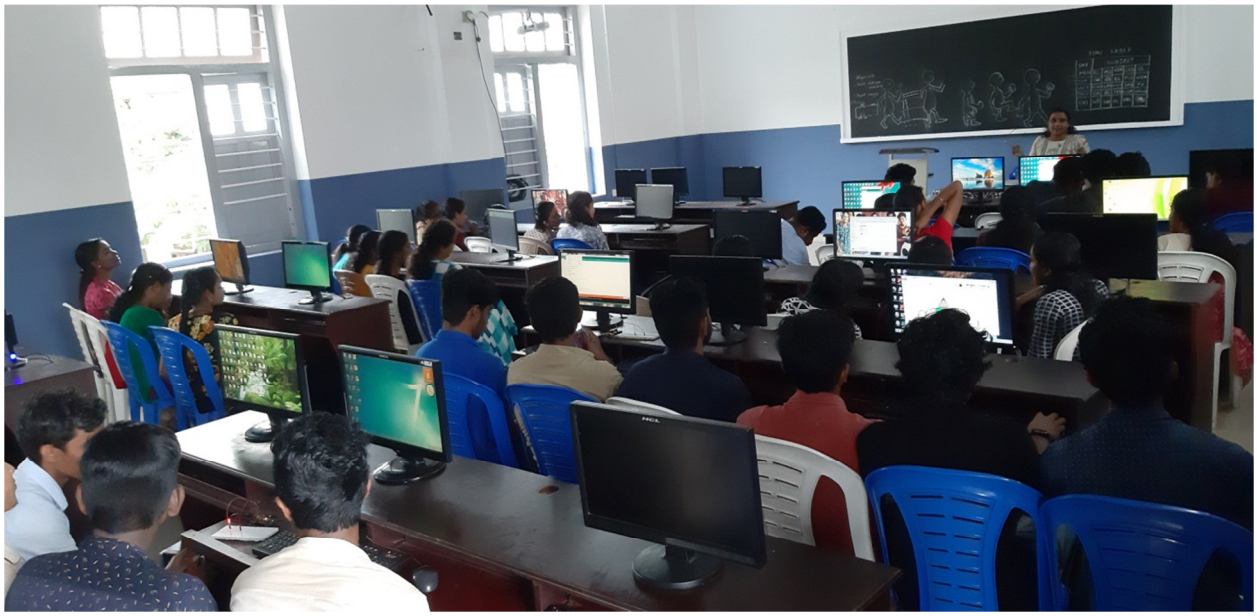
B.Sc Physics 2017 Admission *has completed*

*Certificate/Add-on course in* Robotics (PY 092)

*offered by the Department of Physics during the academic year 2019-2020. He/She is awarded with* A *Grade.*

**Head of the Department** | **Course Coordinator** | **Principal**

PHOTOGRAPH



St Michael's College, Cherthala

# Add on course on

# Robotics

## Report

Robotics is an interdisciplinary field that involves the design, construction, operation, and use of robots. Robotics integrates many fields that deal with specific aspects of robotics. In order to make the students familiar with this new emerging research field in Physics, an add on course was introduced on Robotics for B.Sc Physics students in the academic year 2019- 2020. Through this course the students came to know about the basics of Electronics, Electronic hardware components, microcontrollers etc. This course was designed as a 41 hour duration programme and it was implemented successfully.

29 students enrolled in this course and all of them successfully completed the course. An evaluation was conducted and all are given certificate of merit. Some of them did their final year B.Sc project on the basis of this add on course.


Principal
St. Michael's College
Cherthala