



Indra Ganesan

COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

INDRA GANESAN COLLEGE OF ENGINEERING





DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2020-2021 / ODD SEMESTER

1.2 Academic Flexibility (30)

1.2.1 Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc. (where the students of the institution have enrolled and successfully completed during the last five years)

AND

1.2.2 Percentage of students enrolled in Certificate/ Value added courses and also completed online courses of MOOCs, SWAYAM, NPTEL etc. as against the total number of students during the last five years

VAC Title:	ARDUINO PROGRAMMING				
Resource Person:	Mr.K.C.Tamil Vendhan, The Human Resource Manager, Galwin Technology Trichy				
Date of conduct from:	01.02.2021	To:	05.02.2021	Duration:	30 Hours
Organized Department:	ELECTRONICS AND COMMUNICATION ENGINEERING				
Participant Year:	ECE IV, III, II	Semester:	ODD	No. of Students Registered:	53
Venue:	Online mode link : https://us05web.zoom.us/j/2423859769?pwd=K3JZd1JiS3FqTk1kenJzWStNQ0NDQT09				

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Madurai Main Road (NH-45B), Manikandam, Trichy-12.
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Department of Electronics and Communication Engineering

Academic Year 2020-2021 –Odd Semester

25.01.2021

DEPARTMENT CIRCULAR

Department of Electronics and Communication Engineering and IQAC of IGCE in association with Galwin Technology, is going to organize Value Added Course for all Second, Third and Final year students on “**ARDUINO PROGRAMMING**” from **01.02.2021 to 05.02.2021**. Certificates will be issued to the eligible participants at the end of the Course. This training is to be provided in online mode.

Resource Person Detail	Mr.K.C.Tamil Vendhan, The Human Resource Manager, Galwin Technology, Trichy
Venue	Online Mode Link: https://us05web.zoom.us/j/2423859769?pwd=K3JZd1JiS3FqTk1kenJzWStNQ0NDQT09

HOD/ECE

PRINCIPAL

Cc:

- Principal office
- IQAC Co-Ordinator
- Class In charges - II, III & IV-Year
- II, III & IV-Year ECE Students
- Office File
- Notice Board

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 01.



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Value Added Course

"ARDUINO PROGRAMMING"

SYLLABUS

S.NO	TOPIC COVERED	DURATION (in hours)	DATE
1	Introduction to Embedded systems, Introduction to Arduino programming	3	01.02.2021
2	Basic Components, Introduction to the Concept of IoT Devices	3	01.02.2021
3	Types of Arduino, Arduino Toolchain	3	02.02.2021
4	Arduino Programming Structure -Sketches - Pins	3	02.02.2021
5	Input/Output From Pins Using Sketches	3	03.02.2021
6	Introduction to Arduino Shields	3	03.02.2021
7	Integration of Sensors and Actuators with Arduino	3	04.02.2021
8	IoT configurations, General Hardware Interfacings:	3	04.02.2021
9	Work with LED Controlled by Switch/potentiometer, 7 segment displays. How to connect relays and servomotors to ARDUINO Board.	3	05.02.2021
10	Project Based on embedded system design using Arduino board.	3	05.02.2021
11	Exam	1	05.02.2021
Total Hours (Excluding Exam)		30	-

VAC Coordinator

HOD/ECE

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Value Added Course

“ARDUINO PROGRAMMING”

STUDENTS PARTICIPATION LIST

S.NO	REG NO	STUDENTS NAME	YEAR/ BRANCH
1	811217106001	Aishwariya S	IV/ECE
2	811217106002	Aneesha A	IV/ECE
3	811217106003	Deepika B	IV/ECE
4	811217106004	Durga D	IV/ECE
5	811217106005	Gangadevi M	IV/ECE
6	811217106006	Janani C	IV/ECE
7	811217106009	Karthick K	IV/ECE
8	811217106010	Kosiananth R	IV/ECE
9	811217106011	Lakshmi M	IV/ECE
10	811217106012	Manikandan M	IV/ECE
11	811217106013	Mekala Devi S	IV/ECE
12	811217106014	Pandimeena R	IV/ECE
13	811217106016	Preethi V	IV/ECE
14	811217106017	Raashitha Jannath A	IV/ECE
15	811217106018	Ranjitha T	IV/ECE
16	811217106019	Riyas Mohammed K	IV/ECE
17	811217106020	Saimouli N	IV/ECE
18	811217106021	Sarumathi A	IV/ECE
19	811217106022	Shalini M	IV/ECE
20	811217106023	Siva Sankari M	IV/ECE
21	811218106001	Abinaya R	III/ECE
22	811218106002	Akila K	III/ECE
23	811218106004	Arthi M	III/ECE
24	811218106005	Azhagu Mecna M	III/ECE
25	811218106006	Devi K	III/ECE
26	811218106007	Dhanalakshmi S	III/ECE
27	811218106008	Hari Krishnan S	III/ECE
28	811218106009	Janani V	III/ECE
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30	811218106011	Jenifer S	III/ECE
31	811218106012	Kesavamurthi M	III/ECE
32	811218106013	Kiruthika S	III/ECE
33	811218106015	Maria Francis D	III/ECE
34	811218106016	Ragavi A	III/ECE

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S.NO	REG NO	STUDENTS NAME	YEAR/ BRANCH
35	811218106017	Ruthramoorthy M	III/ECE
36	811218106018	Sabarinathan K	III/ECE
37	811218106019	Sarmila M	III/ECE
38	811218106020	Sumathi	III/ECE
39	811218106021	Thivya Priya R	III/ECE
40	811219106001	Dayana P	II/ECE
41	811219106002	Devika K	II/ECE
42	811219106003	Dinesh J	II/ECE
43	811219106004	Mohana Sundaram K	II/ECE
44	811219106005	Ravikumar B	II/ECE
45	811219106006	Santhanaraj A	II/ECE
46	811219106007	Shyam CR	II/ECE
47	811219106008	Srikanth M	II/ECE
48	811219106009	Surendran S	II/ECE
49	811219106010	Surya V	II/ECE
50	811219106011	Swetha K	II/ECE
51	811219106301	Yuvashree S	II/ECE
52	811219106701	Vijayalakshmi V	II/ECE
53	811219106702	Ponnarasu S	II/ECE

VAC Coordinator

HOD/ECE

Dr. G. Balakrishnan, M.E., Ph.D.,


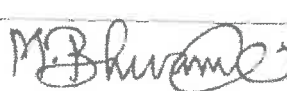

Principal


Indra Ganesan College of Engineering

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Manikandam, Trichy-620 012.



REPORT ON VALUE ADDED COURSE					
Title:	"ARDUINO PROGRAMMING"				
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Venue:	Online Mode Link : https://us05web.zoom.us/j/2423859769?pwd=K3JZd1JiS3FqTk1kenJzWSStNQ0NDQT09				
Outcome of Value Added Course (VAC): At the end of the Course, Students can be able to					
<ul style="list-style-type: none">• Know about the embedded systems and the structure of Arduino program• Explain the basic concepts of IoT devices• Know the types of Arduino and concepts of Arduino Tool chain• Explain the concept of sketches and pins in Arduino programming structure• Know the concepts of Aduino shields, Sensors and Actuators• Develop a project based on embedded system design using Arduino board.					
Assessment Process					
<ul style="list-style-type: none">• Students, who are securing more than 70% on total score and secured more than 75% in attendance is eligible to receive the certificate for the VAC course conducted• Total Score = (0.5 *Attendance in VAC out of 100 percentage + 0.5 *Test mark in VAC out of 100 marks)					
 VAC Coordinator		 HoD/ECE		 Principal	


Dr. G. Balakrishnan, M.E., Ph.D.,
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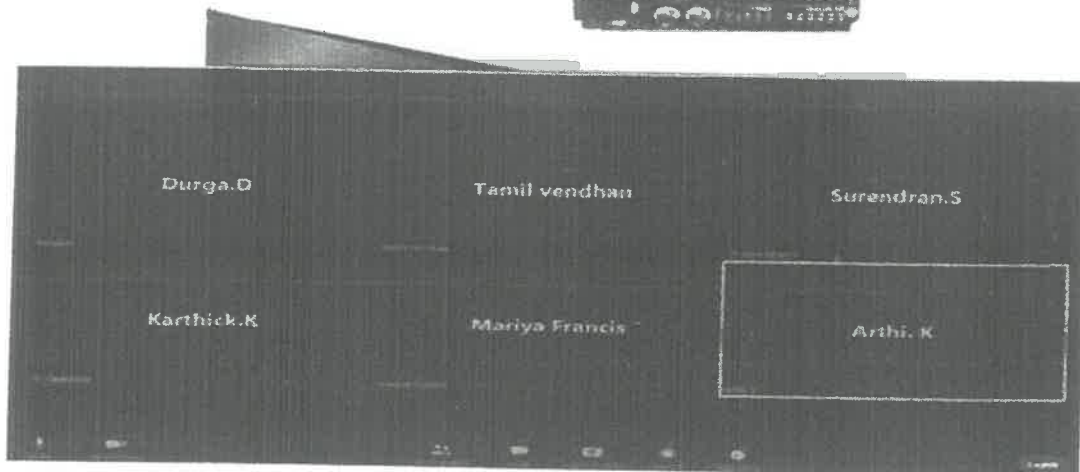
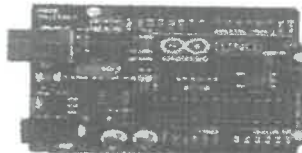
SAMPLE PHOTOS OF VAC ON ARDUINO PROGRAMMING

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Sample Photos

What is an Arduino ?

Open Source electronic prototyping platform based on flexible easy to use hardware and software.



Sir
VAC Coordinator

M. Bhuvan
HoD/ECE

[Signature]
Principal

Dr. G. Balakrishnan, M.E., Ph.D.,
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Name of the Student:

Year/Sem:

AU Register Number:

Value Added Course

“ARDUINO PROGRAMMING”

MULTIPLE CHOICE QUESTIONS (25X1 = 25 Marks)

1. What is Arduino?
 - a) Programming language
 - b) Image editing software
 - c) Open-source electronics platform
 - d) Text editor
2. How many types of Arduino do we have?
 - a) 4
 - b) 8
 - c) 12
 - d) 16
3. What language is a typical Arduino code based on?
 - a) Assembly Code
 - b) Python
 - c) Java
 - d) C/C++
4. Arduino shields are also called as _____
 - a) Another Arduinos
 - b) Extra peripherals
 - c) Add on modules
 - d) Connectivity modules
5. What language is the Arduino IDE built on?
 - a) Java
 - b) HTML
 - c) C/C++
 - d) Python
6. How many analog pins are used in Arduino Mega board?
 - a) 12
 - b) 16
 - c) 8
 - d) 14
7. Arduino IDE consists of 2 functions. What are they?
 - a) Loop() and build() and setup()
 - b) Build() and loop()
 - c) Setup() and build()
 - d) Setup() and loop()
8. Arduino Codes are referred to as _____ in the Arduino IDE.
 - a) sketches
 - b) drawings
 - c) links


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d) notes

9. What is the default bootloader of the Arduino UNO?

- a) AIR-boot
- b) GAG
- c) Optiboot bootloader
- d) Bare box

10. What does p refer to in ATmega328p?

- a) Programmable on chip
- b) Power-Pico
- c) Production
- d) Pico-Power

11. What is the use of the Arduino.h header file?

- a) It enables the programmer to access all of Arduino's core functionality
- b) It doesn't have any use and can be omitted at any point of time in the code
- c) It gives root access to the microcontroller's file system
- d) It allows other people to create libraries for the Arduino code

12. What is the use of the Vin pin present on some Arduino Boards?

- a) To ground the Arduino Board
- b) To power the Arduino Board
- c) To provide a 5V output
- d) Is used for plugging in 3V supply

13. What is the correct execution process of an Arduino code?

- a) Editor->Preprocessor->Compiler
- b) Preprocessor->Editor->Compiler
- c) Compiler->Preprocessor->Editor
- d) Editor->Compiler->Preprocessor

14. What is the microcontroller used in Arduino UNO?

- a) ATmega32114
- b) AT91SAM3x8E
- c) ATmega2560
- d) ATmega328p

15. Which board is the first to use a microcontroller within the build USB?

- a) RedBoard
- b) Leonardo
- c) LilyPad
- d) UNO

16. Which Arduino Board contains an onboard joystick?

- a) Arduino Nano
- b) Arduino UNO
- c) Arduino Esplora
- d) Arduino Due

17. What is the function of the IOREF pin on the Arduino UNO?

- a) To take input voltage and set it as a reference for all GPIO operations
- b) To provide a constant 12V DC supply
- c) To provide ground


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d) To provide the voltage corresponding to the standard GPIO working voltage of the board

18. Which processor supports the Arduino Zero?

- a) ARM Cortex M0+
- b) ARM Cortex M3
- c) Atmega32u4
- d) Atmega328P

19. Which software is used to upload the Arduino Sketches to the board?

- a) avrgcc
- b) g++
- c) cpython for windows
- d) avrdude

20. What is the use for the 2 serial pins on the Arduino Diecimila?

- a) To send PWM signals
- b) To send and receive Serial TTL signals
- c) To send and receive GPIO digital signals
- d) To receive analog signals

21. Which Arduino Boards use the Atmega2560?

- a) Arduino Micro and Due
- b) Arduino Nano and Fio
- c) Arduino Mega and Mega ADK
- d) Arduino Uno and Robot

22. What is the operating voltage of Atmega328?

- a) 1.9V to 5V
- b) 1.8V to 5.5V
- c) 1.1V to 5V
- d) 12V to 9V

23. Which Arduino Boards use the Atmega32U4?

- a) Arduino Uno
- b) None Mega
- c) Arduino Micro
- d) Arduino Leonardo

24. Is the Arduino code an Object-Oriented programming language or a Procedural programming language?

- a) The Arduino Code follows the Top-Down Procedural ideology
- b) The Arduino Code follows a custom Procedural Ideology
- c) The Arduino Code follows the Object-Oriented ideology
- d) The Arduino Code follows the Bottom-Up Procedural ideology

25. What is the difference between an IDE and a compiler?

- a) The compiler executes the code while the IDE gives a graphical environment for writing the code
- b) The compiler links the code to the respective files and the IDE takes it from there
- c) The compiler and the IDE are the same thing

The IDE executes the code while the compiler gives a graphical environment for writing the code

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Value Added Course "ARDUINO PROGRAMMING"

ANSWER KEY

1	C	6	B	11	A	16	C	21	C
2	B	7	D	12	B	17	D	22	B
3	D	8	A	13	A	18	A	23	D
4	C	9	C	14	D	19	D	24	C
5	A	10	D	15	B	20	B	25	A

VAC Coordinator

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Name of the student: Divya D.

Year/sem: IV/VII

AU Register Number: 311511101004

Value added course
"ARDUINO PROGRAMMING"

1) C ✓

2) B ✓

3) C X

4) C ✓

5) A ✓

6) B ✓

7) D ✓

8) B X

9) C ✓

10) D ✓

11) A ✓

12) C X

13) A ✓

14) D ✓

15) B ✓

16) C ✓

17) D ✓

18) A ✓

19) D ✓

20) B ✓

21) C ✓

22) B ✓

23) D ✓

24) C ✓

25) A ✓

$\frac{22}{25}$

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Department of Electronics and Communication Engineering

Academic Year 2020-2021 – Odd Semester

VALUE ADDED COURSE ASSESMENT SHEET

ARDUINO PROGRAMMING


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S.NO	REG NO	STUDENTS NAME	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK(100) (50% of A + 50% of B)
				No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
1	811217106001	Aishwariya S	IV/ECE	30	100	20	80	90
2	811217106002	Aneesha A	IV/ECE	27	90	19	76	90
3	811217106003	Deepika B	IV/ECE	30	100	19	76	83
4	811217106004	Durga D	IV/ECE	30	100	22	84	87
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12	811217106014	Pandimeena R	IV/ECE	27	90	20	80	85
13	811217106016	Preethi V	IV/ECE	30	100	22	88	92
14	811217106017	Raashitha Jannath A	IV/ECE	27	90	19	76	88
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46	811219106007	Shyam CR	II/ECE	27	90	19	76	92
47	811219106008	Srikanth M	II/ECE	27	90	19	76	83
48	811219106009	Surendran S	II/ECE	30	100	20	80	80
49	811219106010	Surya V	II/ECE	27	90	19	76	80

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S.NO	REG NO	STUDENTS NAME	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK(100) (50% of A + 50% of B)
				No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
50	811219106011	Swetha K	II/ECE	27	90	19	76	83
51	811219106301	Yuvashree S	II/ECE	30	100	20	80	90
52	811219106701	Vijayalakshmi V	II/ECE	27	90	19	76	83
53	811219106702	Ponnarasu S	II/ECE	24	80	21	84	82

VAC Coordinator

HOD/ECE

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