



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 – 2

TEACHING-LEARNING AND EVALUATION

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL
INDRA GANESAN COLLEGE OF ENGINEERING





Criteria2

Teaching-Learning and Evaluation

350

KeyIndicator-2.3.Teaching-Learning Process (40)

2020-2021

PARTICIPATIVE LEARNING

ELECTRICAL AND ELECTRONICS ENGINEERING

Activity	Number of Students Attended	Page No.
Value Added Course(VAC)	90	3
TOTAL STUDENTS ATTENDED	90	-



Criteria2

Teaching-Learning and Evaluation

350

KeyIndicator-2.3.Teaching-Learning Process (40)

2020-2021

ELECTRICAL AND ELECTRONICS ENGINEERING

PARTICIPATIVE LEARNING

VALUE ADDED COURSE



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Department of Electrical and Electronics Engineering

Academic Year 2020-2021 –Odd Semester

04.02.2021

DEPARTMENT CIRCULAR

Department of Electrical and Electronics Engineering and IQAC of IGCE in association with Sri Sai Software is going to organize Value Added Course for all Second, Third and Final year students on "IoT-Raspberry Pi" from 08.02.2021 to 12.02.2021. Certificates will be issued to the eligible participants at the end of the Course. This training will be conducted through online mode.

Resource Person Detail	1. M.Suresh, Design Engineer, Sri Sai Software.
Online Mode	Google Meet

G. Malathi
HOD/EEE


Principal

Cc:

- Principal office
- IQAC Co-Ordinator
- Class In charges - II, III & IV-Year
- II, III & IV-Year EEE 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-620 012.



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Value Added Course

"IoT-Raspberry Pi"

SYLLABUS

S.NO	TOPIC COVERED	DURATION (in hours)	DATE
1	Introduction to IoT	3	08.02.2021
2	Basics of Networking, Communication Protocols	3	08.02.2021
3	Sensor Networks	3	09.02.2021
4	Machine-to-Machine Communications	3	09.02.2021
5	Interoperability in IoT, Introduction to Arduino Programming	3	10.02.2021
6	Integration of Sensors and Actuators with Arduino Introduction to Python programming,	3	10.02.2021
7	Introduction to Raspberry Pi, Implementation of IoT with Raspberry Pi	3	11.02.2021
8	SDN for IoT (contd), Data Handling and Analytics, Cloud Computing	3	11.02.2021
9	Fog Computing, Smart Cities and Smart Homes	3	12.02.2021
10	Connected Vehicles, Smart Grid, Industrial IoT, Industrial IoT (contd), Case Study: Agriculture, Healthcare, Activity Monitor	3	12.02.2021
11	Exam	1	12.02.2021
Total Hours (Excluding Test)		30	-


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

Principal

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.


VAC Coordinator


G. Mani Latha
HOD/EEE



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Value Added Course

STUDENTS PARTICIPATION LIST

"IoT-Raspberry Pi"

S.NO	Register Number	Student Name	YEAR/ BRANCH
1	811217105005	ARUL JOY ASHA A	IV/EEE
2	811217105006	ARUN SEBASTIN P	IV/EEE
3	811217105007	BHARTHASARATHI M	IV/EEE
4	811217105008	CHITHRA P	IV/EEE
5	811217105009	DEEPIKA G	IV/EEE
6	811217105010	EZHUMALAI A	IV/EEE
7	811217105011	GAYATHRI K	IV/EEE
8	811217105012	GAYATHRI S	IV/EEE
9	811217105013	KANIMOZHI S	IV/EEE
10	811217105014	KEERTHANA S	IV/EEE
11	811217105015	KUMARIVALLI T	IV/EEE
12	811217105016	MADHUMITHA S	IV/EEE
13	811217105017	MANO K	IV/EEE
14	811217105018	MEKALA M	IV/EEE
15	811217105020	PAVITHRA S	IV/EEE
16	811217105021	PRAVEEN RAJ R	IV/EEE
17	811217105022	RAJASEKAR.N V	IV/EEE
18	811217105023	REVATHI P	IV/EEE
19	811217105024	RISHON GURU M	IV/EEE
20	811217105026	SANTHOSH K	IV/EEE
21	811217105027	SRIKUMAR M S	IV/EEE
22	811217105028	SRI LOGESH C	IV/EEE
23	811217105029	SUBHA T	IV/EEE
24	811217105031	VALARMATHI C	IV/EEE
25	811217105032	VISWANATH R	IV/EEE
26	811217105301	SANJEEV KUMAR R	IV/EEE
27	811218105001	ARUN PRAVEEN RAJ A	III/EEE
28	811218105002	HARIHARAN M	III/EEE
29	811218105003	INBARAJ A	III/EEE
30	811218105004	JEYA STEPHEN S	III/EEE

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

Principal

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road

Trichy-12, Tamil Nadu-620 012




Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

S.NO	Register Number	Student Name	Year/ Branch
31	811218105005	MANIKANDAN N	III/EEE
32	811218105006	PADMANABAN A	III/EEE
33	811218105007	SASIKUMAR R	III/EEE
34	811218105008	SIVAKUMAR P	III/EEE
35	811218105009	VEERA RAGAVAN A	III/EEE
36	811218105010	YUVARAJ S	III/EEE
37	811219105001	ARULRAJ .A	II/EEE
38	811219105002	BARATH M.M	II/EEE
39	811219105003	MANIKANDAN A	II/EEE
40	811219105004	MANIKANDAN K	II/EEE
41	811219105005	PONNALAGU C	II/EEE
42	811219105006	SALAMON A	II/EEE
43	811219105007	SARAVANAKUMAR M	II/EEE
44	811219105008	SOLAIMATHI .K	II/EEE
45	811219105701	DHEVENTHIRAN .P	II/EEE
46	813919105301	VENKATRAMAN.A	II/EEE


VAC Coordinator


HOD/EEE


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




Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH 45B), Manikandam, Trichy - 12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

S.NO	Register Number	Name	YEAR/ BRANCH	08.02.2021		09.02.2021		10.02.2021		11.02.2021		12.02.2021		NO OF SESSIONS ATTENDED	SIGNATURE OF THE STUDENT
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
36	811218105010	YUVARAJ S	III/EEE	P	P	P	P	P	P	P	A	P	P	9	ONLINE
37	811219105001	ARULRAJ .A	II/EEE	P	P	P	P	P	P	P	P	P	P	10	
38	811219105002	BARATH M.M	II/EEE	P	P	P	P	P	P	P	P	P	P	10	
39	811219105003	MANIKANDAN A	II/EEE	P	P	P	P	P	P	P	P	P	P	10	
40	811219105004	MANIKANDAN K	II/EEE	P	P	P	P	P	A	P	P	P	P	9	
41	811219105005	PONNALAGU C	II/EEE	P	P	A	P	P	P	P	A	P	P	8	
42	811219105006	SALAMON A	II/EEE	P	P	P	P	P	A	P	P	P	P	9	
43	811219105007	SARAVANAKUMAR M	II/EEE	P	P	P	P	P	P	P	P	P	P	10	
44	811219105008	SOLAIMATHI .K	II/EEE	P	P	P	P	P	P	P	A	P	P	9	
45	811219105701	DHEVENTHIRAN .P	II/EEE	P	P	P	P	P	A	P	P	P	P	9	
46	813919105301	VENKATRAMAN.A	II/EEE	P	P	A	P	P	P	P	A	P	P	8	


VAC Coordinator


HoD/EEE


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:

Year/Sem:

AU Register Number:

Value Added Course
“IoT-Raspberry Pi”

MULTIPLE CHOICE QUESTIONS (25X1 = 25 Marks)

1. The Raspberry Pi is defined as the _____
a) Micro Computer b) Mega Computer c) Minicomputer d) Nano Computer
2. Raspbian is _____
a) Assembler b) Language c) Compiler d) OS
3. Raspberry Pi consists of a _____ quad-core processor or microprocessor.
a) 16-bit b) 32-bit c) 64-bit d) 128-bit
4. The Raspberry Pi has a _____ interface to allow it to perform serial data communications.
a) UART b) GPIO c) I2C d) SPI
5. How many USB ports are present in Raspberry Pi 3?
a) 5 b) 2 c) 4 d) 3
6. What bit processor is used in Pi 3?
a) 64-bit b) 32-bit c) 128-bit d) Both 64 and 32 bit
7. What is the speed of operation in Pi 3?
a) 900MHz b) 1.2GHz c) 1GHz d) 500MHz
8. What is the Ethernet/LAN cable used in RPi?
a) Cat5 b) Cat5e c) Cat6 d) RJ45
9. How many Input/output pins on board Raspberry Pi3 has?
a) 20 b) 30 c) 40 d) 50
10. How much RAM, the Raspberry Pi has?
a) 2GiB of RAM b) 1GiB of RAM c) 4GiB of RAM d) 8GiB of RAM


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



11. What is the maximum peripheral current draw allowed in Raspberry Pi 3?

- a) 1200 Ma b) 700 mA c) 500 mA d) 100 mA

12. What does GPIO stand for?

- a) General Purpose Inner Outer Propeller b) General Purpose Input Output Pins
c) Generally Powered Input Output Pins d) General Purpose Input Output Processor

13. What do we use to connect TV to RPi?

- a) Male HDMI b) Female HDMI
c) Male HDMI and Adapter d) Female HDMI and Adapter

14. Data collected by Raspberry Pi from the sensor can be

- a) Processed in Raspberry Pi b) Sent to other devices connected to the network
c) Used to control/activate other devices in the network d) All of the above

15. Which operating system Raspberry Pi has?

- a) Linux b) Open BSD c) Net BSD d) All of the above

16. How power supply is done to RPi?

- a) USB connection b) Internal battery c) Charger d) Adapter

17. What are the mode(s) used for addressing the pins in Raspberry Pi?

- a) GPI b) BCM c) BOARD & BCM d) GPIO, BCIM & CAN

18. What are the parameters that are default values?

- a) Port Name and Bits b) Speed and Port Names
c) Speed and Parity d) Stop bit and Flow Control

19. The BCM 14 pin of Raspberry Pi is

- a) Physical pin 8 b) UART
c) Transmitter pin d) All of the above

20. What is the command used for easy using of GNU screen?

- a) \$user add -G {dial out} your name b) Screen Port_Name115200
c) Minicom -b 115200 -o -D Port Name d) Prompt> # help


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

Indra Ganesan College of Engineering,
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.



21. The Raspberry Pi is defined as the?

- a) Minicomputer b) Micro Computer
c) Mega Computer d) Nano Computer

22. Which instruction set architecture is used in Raspberry Pi?

- a) X86 b) MSP c) AVR d) ARM

23. Which instruction set is used in Raspberry Pi?

- a) CISC b) RISC c) MIPS d) None of these mentioned

24. Which of the following variants of Raspberry Pi has an inbuilt wi-fi?

- a) Raspberry Pi 2 b) Raspberry Pi 3
c) Raspberry Pi A+ d) Raspberry Pi Zero

25. Which of the following is a not type of Raspberry Pi?

- a) Raspberry Pi Alternatives b) Raspberry Pi Zero W
c) Raspberry Pi 3 Model B+ d) Raspberry Pi 3 Model A+


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

Principal

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH 45B), Manikandam, Trichy 12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Value Added Course

“IoT-Raspberry Pi”

ANSWER KEY

1	c	6	a	11	a	16	a	21	a
2	d	7	b	12	b	17	c	22	d
3	c	8	d	13	c	18	b	23	c
4	a	9	c	14	d	19	d	24	b
5	c	10	b	15	d	20	b	25	d

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

Principal

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road

Manikandam, Trichy-620 012.

VAC Coordinator

IOT - Raspberry Pi

12/2/21

ARULRAJ.A

811219105001

II Yr / III sem

1. c) Mini computer

2. d) OS

3. c) 64-bit

4. b) GPEA

5. c) 4

6. a) 64-bit

7. b) 1.2 GHz

8. d) RJ45

9. d) 50

10. b) 16 GB of RAM

11. a) 1200 mA

12. b) general purpose input output pin

13. c) Male HDMI and Adapter

14. b) sent to other devices computer to the network

15. d) All of above

16. a) USB connection

17. c) Board & RAM

18. b) speed and Part Name

19. c) Transmitter Role

20. b) screen port - Nano 15200-

21. b) Mini computer

22. d) RAM

23. c) MIPS

24. c) Raspberry Pi

25. d) Raspberry Pi Model B+

20
25

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

Principal

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road

Manikandam, Trichy-620 012.

IOT- Raspberry

12.2.21

VEENA RAGAVAN.A


811218105009

IIIrd year EEE / 5th sem

- 1) c) Minicomputer
- 2) d) OS
- 3) b) 32-bit
- 4) a) UART
- 5) c) 4V
- 6) a) 64 bit
- 7) c) LAN
- 8) d) RJ45
- 9) c) 40
- 10) b) 1 GiB of RAM
- 11) a) 1200mA
- 12) a) General purpose inner outer propeller
- 13) c) Male HDMI and Adaptor
- 14) d) All of the Above
- 15) d) All of the Above
- 16) b) Internal battery
- 17) c) Board & BSC1
- 18) b) Speed and port names
- 19) d) All of the Above
- 20) b) screen port - name 15200
- 21) a) Minicomputer
- 22) d) ARM
- 23) c) MIPS
- 24) b) Raspberry Pi 3
- 25) d) Raspberry pi 3 model A+

21

25


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

12.2.21

ToT - Raspberry Pi


Name: Koonthana S

Reg No: 811217105014

Year/Sem: IV / 107

1. c. Mini computers ✓
2. d. OS ✓
3. c. 64-bit ✓
4. b. GPT ✓
5. c. 4 ✓
6. a. 64-bit ✓
7. b. 12GHz ✓
8. d. RJ45 ✓
9. d. 50 ✓
10. b. 1 GiB of RAM ✓
11. a. 1200 Ma ✓
12. b. General purpose Input output pins ✓
13. c. Male HDMI and Adaptor ✓
14. b. Sent to other devices connected to the network ✓
15. d. All of the above ✓
16. a. USB connection ✓
17. c. Boddle & BCS ✓
18. b. Speed and port Name ✓
19. c. Transmitter pin ✓
20. b. Screen Port Name 115200 ✓

19
25


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



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

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

Principal

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road

Manikandam, Trichy-620 012.

Department of Electrical and Electronics Engineering

Academic Year 2020-2021 – Odd Semester

VALUE ADDED COURSE ASSESMENT SHEET

“IoT-Raspberry Pi”

S.NO	Register Number	Name	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK (100) (50% of A + 50% of B)
				No. of Hours Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
1	811217105005	ARUL JOY ASHA A	IV/EEE	30	100	20	80	90
2	811217105006	ARUN SEBASTIN P	IV/EEE	30	100	19	76	88
3	811217105007	BHARTHASARATHI M	IV/EEE	27	90	20	80	85
4	811217105008	CHITHRA P	IV/EEE	27	90	21	84	87
5	811217105009	DEEPIKA G	IV/EEE	27	90	20	80	85
6	811217105010	EZHUMALAI A	IV/EEE	27	90	19	76	83
7	811217105011	GAYATHRI K	IV/EEE	30	100	20	80	90
8	811217105012	GAYATHRI S	IV/EEE	27	90	20	80	85
9	811217105013	KANIMOZHI S	IV/EEE	27	90	19	76	83
10	811217105014	KEERTHANA S	IV/EEE	27	90	19	76	83
11	811217105015	KUMARIVALLI T	IV/EEE	30	100	21	84	92
12	811217105016	MADHUMITHA S	IV/EEE	27	90	20	80	85
13	811217105017	MANO K	IV/EEE	30	100	21	84	92



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B) Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai


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

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam Trichy-620 012.

S.NO	Register Number	Name	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK (100) (50% of A + 50% of B)
				No. of Hours Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
14	811217105018	MEKALA M	IV/EEE	30	100	20	80	90
15	811217105020	PAVITHRA S	IV/EEE	27	90	19	76	83
16	811217105021	PRAVEEN RAJ R	IV/EEE	24	80	20	80	80
17	811217105022	RAJASEKAR.N V	IV/EEE	24	80	21	84	82
18	811217105023	REVATHI P	IV/EEE	27	90	22	88	89
19	811217105024	RISHON GURU M	IV/EEE	30	100	20	80	90
20	811217105026	SANTHOSH K	IV/EEE	27	90	21	84	87
21	811217105027	SRIKUMAR M S	IV/EEE	24	80	20	80	80
22	811217105028	SRI LOGESH C	IV/EEE	27	90	21	84	87
23	811217105029	SUBHA T	IV/EEE	30	100	20	80	90
24	811217105031	VALARMATHI C	IV/EEE	30	100	20	80	90
25	811217105032	VISWANATH R	IV/EEE	30	100	21	84	92
26	811217105301	SANJEEV KUMAR R	IV/EEE	30	100	21	84	92
27	811218105001	ARUN PRAVEEN RAJ A	III/EEE	27	90	20	80	85
28	811218105002	HARIHARAN M	III/EEE	27	90	19	76	83
29	811218105003	INBARAJ A	III/EEE	27	90	19	76	83
30	811218105004	JEYA STEPHEN S	III/EEE	27	90	20	80	85
31	811218105005	MANIKANDAN N	III/EEE	30	100	21	84	92
32	811218105006	PADMANABAN A	III/EEE	27	90	19	76	83



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

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

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

S.NO	Register Number	Name	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK (100) (50% of A + 50% of B)
				No. of Hours Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
33	811218105007	SASIKUMAR R	III/EEE	24	80	21	84	82
34	811218105008	SIVAKUMAR P	III/EEE	27	90	20	80	85
35	811218105009	VEERA RAGAVAN A	III/EEE	30	100	21	84	92
36	811218105010	YUVARAJ S	III/EEE	27	90	19	76	83
37	811219105001	ARULRAJ .A	II/EEE	30	100	19	76	88
38	811219105002	BARATH M.M	II/EEE	30	100	20	80	90
39	811219105003	MANIKANDAN A	II/EEE	30	100	21	84	92
40	811219105004	MANIKANDAN K	II/EEE	27	90	21	84	87
41	811219105005	PONNALAGU C	II/EEE	24	80	20	80	80
42	811219105006	SALAMON A	II/EEE	27	90	21	84	87
43	811219105007	SARAVANAKUMAR M	II/EEE	30	100	20	80	90
44	811219105008	SOLAIMATHI .K	II/EEE	27	90	19	76	83
45	811219105701	DHEVENTHIRAN .P	II/EEE	27	90	21	84	87
46	813919105301	VENKATRAMAN.A	II/EEE	24	80	20	80	80

Jr
VAC Coordinator

Gr. Ma Lath
HOD/EEE



Report on Value Added Course

Title:	"IoT-Raspberry Pi "				
Resource Person:	M.Suresh, Design Engineer, Sri Sai Software.	A. Siva Subramanian, Trainer, Sri Sai Software			
Date of conduct from :	08.02.2021	To:	12.02.2021	Duration	30 Hours
Organized Department	Electrical and Electronics Engineering				
Participant Year:	2,3,4	No. of Students Registered :		46	
Venue:	Power System Simulation Lab, Ground floor online mode Google Meet: meet.google.com/333-5625-245				
Outcome of Value Added Course (VAC): At the end of the Course, Students can able to					
<ol style="list-style-type: none">1. Describe the concepts of IoT along with its applications.2. Build a prototype using Arduino Uno.3. Identify different types of sensors, actuators and communication Protocols.4. Build a prototype using Raspberry pi.5. Able to design an IoT application to interact.					
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/EEE		 Principal	

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



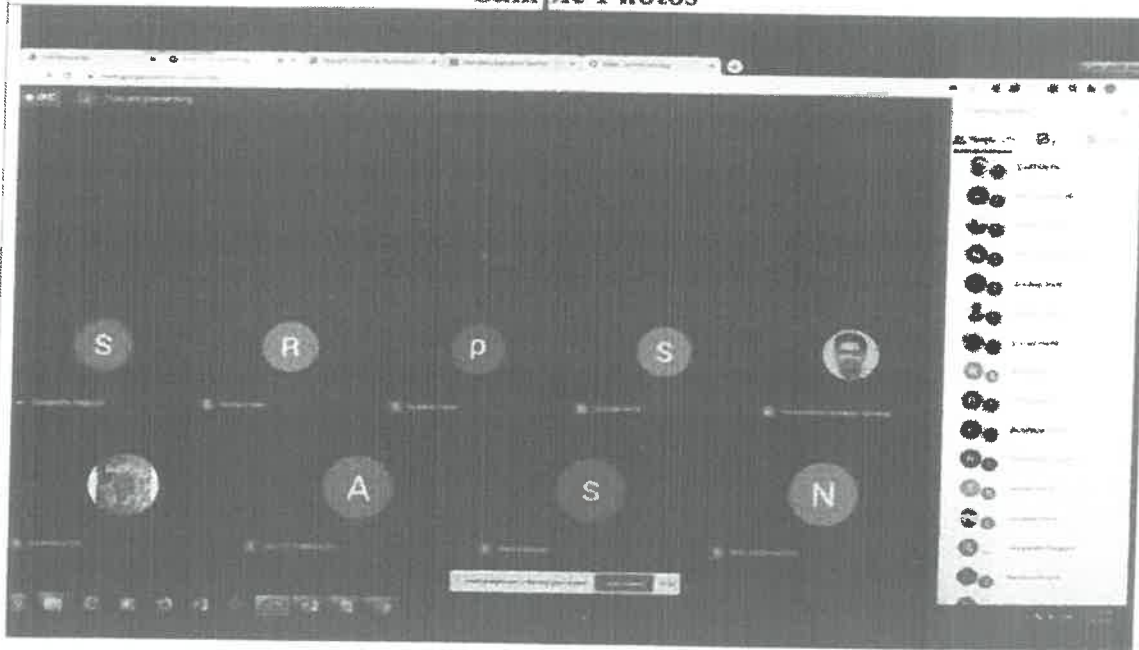
Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Sample Photos of Value Added Course

Title:	"IoT-Raspberry Pi "				
Resource Person:	M.Suresh, Design Engineer, Sri Sai Software.				
Date of conduct from :	08.02.2021	To:	12.02.2021	Duration	30 Hours
Organized Department	Electrical and Electronics Engineering				
Participant Year:	2,3,4	No. of Students Registered :	46		
Venue:	Power System Simulation Lab, Ground floor online mode Google Meet: meet.google.com/abd-hgde-djk				

Sample Photos




VAC Coordinator


HOD/EEE


Principal


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

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012,

SRI SAI SOLUTIONS
SRI SAI SOLUTIONS

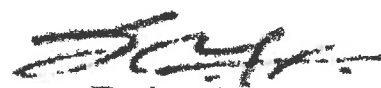
Indra Ganesan
COLLEGE OF ENGINEERING
Madurai Main Road (NH 49B), Manikandam, Trichy - 12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai




CERTIFICATE OF PARTICIPATION

This is to certify that Mr. YUVARAJ S, III Year, EEE has successfully completed the Value Added Course on “IoT-Raspberry Pi” organized by Department of Electrical & Electronics Engineering and IQAC of our Institution in Association with Sri Sai Software from 08th February 2021 to 12th February 2021 (5days) during the Academic year 2020-2021.


Sri Sai Software
Mr.R.Pavan Kumar
Managing Director.



Principal
IGCE

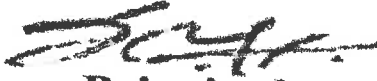

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.




CERTIFICATE OF PARTICIPATION

This is to certify that Ms. SOLAIMATHI .K, II Year, EEE has successfully completed the Value Added Course on “IoT-Raspberry Pi” organized by Department of Electrical & Electronics Engineering and IQAC of our Institution in Association with Sri Sai Software from 08th February 2021 to 12th February 2021 (5days) during the Academic year 2020-2021.


Sri Sai Software
Mr.R.Pavan Kumar
Managing Director.


Principal
IGCE


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

SRI SAI SOLUTIONS


Creating a New World

Indra Ganesan
COLLEGE OF ENGINEERING
Madurai Main Road (NH-46B), Manikandam, Trichy-12.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.




CERTIFICATE OF PARTICIPATION

This is to certify that Ms. KUMARIVALLI T, IV Year, EEE has successfully completed the Value Added Course on “IoT-Raspberry Pi” organized by Department of Electrical & Electronics Engineering and IQAC of our Institution in Association with Sri Sai Software from 08th February 2021 to 12th February 2021 (5days) during the Academic year 2020-2021.


Sri Sai Software
Mr.R.Pavan Kumar
Managing Director.


Principal
IGCE


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



Department of Electrical and Electronics Engineering
Academic Year 2020-2021 –Even Semester

04.08.2021

DEPARTMENT CIRCULAR

Department of Electrical and Electronics Engineering and IQAC of IGCE in association with Micro win Automation is going to organize Value Added Course for all Second, Third and Final year students on “Solar Photovoltaic System Design” from 09.08.2021 to 13.08.2021. Certificates will be issued to the eligible participants at the end of the Course. This training will be conducted through online mode.

Resource Person Detail	1. S.Sridhar, Trainer, Micro win Automation, Trichy-621216
Online Mode	Google Meet

Gr. Ma lathi
HOD/EEE

[Signature]
Principal

Cc:

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

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



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(E) Status Institution by UGC



Value Added Course

“Solar Photo Voltaic System Design”

SYLLABUS

S.NO	TOPIC COVERED	DURATION (in hours)	DATE
1	The PV Cell	3	09.08.2021
2	Series And Parallel Interconnection	3	09.08.2021
3	Energy From Sun	3	10.08.2021
4	Incident Energy Estimation	3	10.08.2021
5	Sizing PV	3	11.08.2021
6	Maximum Power Point Tracking	3	11.08.2021
7	MPPT Algorithms	3	12.08.2021
8	PV-Battery Interfaces	3	12.08.2021
9	Peltier Cooling PV And Water Pumping	3	13.08.2021
10	PV-Grid Interface-I, Life Cycle Costing	3	13.08.2021
11	Exam	1	13.08.2021
Total Hours (Excluding test)		30	-

Jehy Jeyaraj
VAC Coordinator

Ge. Ma batthi
HOD/EEE

[Signature]
Dr. G. Balakrishnan, M.E., Ph.D.,
Principal

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



Value Added Course

“Solar Photo Voltaic System Design”

STUDENTS PARTICIPATION LIST

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

S.NO	Register Number	Name
1	811217105005	ARUL JOY ASHA A
2	811217105006	ARUN SEBASTIN P
3	811217105007	BHARTHASARATHI M
4	811217105008	CHITHRA P
5	811217105009	DEEPIKA G
6	811217105010	EZHUMALAI A
7	811217105011	GAYATHRI K
8	811217105012	GAYATHRI S
9	811217105013	KANIMOZHI S
10	811217105014	KEERTHANA S
11	811217105015	KUMARIVALLI T
12	811217105016	MADHUMITHA S
13	811217105017	MANO K
14	811217105018	MEKALA M
15	811217105020	PAVITHRA S
16	811217105021	PRAVEEN RAJ R
17	811217105022	RAJASEKARN V
18	811217105023	REVATHI P
19	811217105024	RISHON GURU M
20	811217105026	SANTHOSH K
21	811217105027	SRIKUMAR M S



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



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

S.NO	Register Number	Name
22	811217105028	SRI LOGESH C
23	811217105029	SUBHA T
24	811217105031	VALARMATHI C
25	811217105032	VISWANATH R
26	811217105301	SANJEEV KUMAR R
27	811218105001	ARUN PRAVEEN RAJ A
28	811218105002	HARIHARAN M
29	811218105003	INBARAJ A
30	811218105004	JEYA STEPHEN S
31	811218105005	MANIKANDAN N
32	811218105006	PADMANABAN A
33	811218105007	SASIKUMAR R
34	811218105008	SIVAKUMAR P
35	811218105009	VEERA RAGAVAN A
36	811218105010	YUVARAJ S
37	811219105002	M.BARATH
38	811219105003	A.MANIKANDAN
39	811219105005	C.PONNALAGU
40	811219105006	A.SALAMON
41	811219105007	M.SARAVANAKUMAR
42	811219105008	K.SOLAIMATHI
43	813919105001	P.DHEVENTHIRAN
44	811219105301	A. VENKATRAMAN

(Signature)
NAC Coordinator

(Signature)
HOD/EEE



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



Department of Electrical and Electronics Engineering

Academic Year 2020-2021 – Even Semester

STUDENTS ATTENDANCE LIST

“Solar Photo Voltaic System Design”

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

Principal

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

S.NO	Register Number	Name	YEAR/ BRANCH	09.08.2021		10.08.2021		11.08.2021		12.08.2021		13.08.2021		NO OF SESSIONS ATTENDED	SIGNATURE OF THE STUDENT
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
1	811217105005	ARUL JOY ASHA A	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	ONLINE
2	811217105006	ARUN SEBASTIN P	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
3	811217105007	BHARTHASARATHI M	IV/EEE	P	P	P	P	P	A	P	P	P	P	9	
4	811217105008	CHITHRA P	IV/EEE	P	P	P	A	P	P	P	P	P	P	9	
5	811217105009	DEEPIKA G	IV/EEE	P	P	P	P	P	P	A	P	P	P	9	
6	811217105010	EZHUMALAI A	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
7	811217105011	GAYATHRI K	IV/EEE	P	P	P	P	P	P	P	P	P	P	9	
8	811217105012	GAYATHRI S	IV/EEE	P	P	P	P	P	A	P	P	P	P	9	
9	811217105013	KANIMOZHI S	IV/EEE	P	P	P	P	P	P	P	A	P	P	9	
10	811217105014	KEERTHANA S	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
11	811217105015	KUMARIVALLI T	IV/EEE	P	P	P	P	P	P	P	P	P	P	9	
12	811217105016	MADHUMITHA S	IV/EEE	P	P	A	P	P	P	P	P	P	P	10	
13	811217105017	MANO K	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
14	811217105018	MEKALA M	IV/EEE	P	P	P	P	P	P	P	P	P	P	9	
15	811217105020	PAVITHRA S	IV/EEE	P	P	P	P	P	A	P	P	P	P	9	

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



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappelli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



S.NO	Register Number	Name	YEAR/ BRANCH	09.08.2021		10.08.2021		11.08.2021		12.08.2021		13.08.2021		NO OF SESSIONS ATTENDED	SIGNATURE OF THE STUDENT
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
16	811217105021	PRAVEEN RAJ R	IV/EEE	P	A	P	P	P	A	P	P	P	P	8	ONLINE
17	811217105022	RAJASEKAR.N V	IV/EEE	P	P	P	A	P	P	P	A	P	P	8	
18	811217105023	REVATHI P	IV/EEE	P	P	P	P	P	A	P	P	P	P	9	
19	811217105024	RISHON GURU M	IV/EEE	P	P	P	P	P	A	P	P	P	P	9	
20	811217105026	SANTHOSH K	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
21	811217105027	SRIKUMAR M S	IV/EEE	P	P	P	P	A	P	P	A	P	P	8	
22	811217105028	SRI LOGESH C	IV/EEE	P	P	P	P	P	A	P	P	P	P	9	
23	811217105029	SUBHA T	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
24	811217105031	VALARMATHI C	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
25	811217105032	VISWANATH R	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
26	811217105301	SANJEEV KUMAR R	IV/EEE	P	P	P	P	P	P	P	P	P	P	10	
27	811218105001	ARUN PRAVEEN RAJ A	III/EEE	P	P	P	P	P	P	P	A	P	P	9	
28	811218105002	HARIHARAN M	III/EEE	P	P	P	P	P	A	P	P	P	P	9	
29	811218105003	INBARAJ A	III/EEE	P	P	P	P	A	P	P	P	P	P	9	
30	811218105004	JEYA STEPHEN S	III/EEE	P	P	P	A	P	P	P	P	P	P	10	
31	811218105005	MANIKANDAN N	III/EEE	P	P	P	P	P	P	P	P	P	P	9	
32	811218105006	PADMANABAN A	III/EEE	P	P	P	P	P	P	P	A	P	P	9	
33	811218105007	SASIKUMAR R	III/EEE	P	P	P	P	A	P	P	A	P	P	8	
34	811218105008	SIVAKUMAR P	III/EEE	P	P	P	P	P	P	A	P	P	P	9	
35	811218105009	VEERA RAGAVAN A	III/EEE	P	P	P	P	P	P	P	P	P	P	10	
36	811218105010	YUVARAJ S	III/EEE	P	P	P	P	P	A	P	P	P	P	9	



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchtrappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



S.NO	Register Number	Name	YEAR/ BRANCH	09.08.2021		10.08.2021		11.08.2021		12.08.2021		13.08.2021		NO OF SESSIONS ATTENDED	SIGNATURE OF THE STUDENT
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
37	811219105002	M.BARATH	II/EEE	P	P	P	P	P	P	P	P	P	P	10	ONLINE
38	811219105003	A.MANIKANDAN	II/EEE	P	P	P	P	P	P	P	P	P	P	10	
39	811219105005	C.PONNALAGU	II/EEE	P	P	P	P	P	P	P	P	P	P	10	
40	811219105006	A.SALAMON	II/EEE	P	P	P	P	P	P	P	A	P	P	9	
41	811219105007	M.SARAVANAKUMAR	II/EEE	P	A	P	P	P	A	P	P	P	P	8	
42	811219105008	K.SOLAIMATHI	II/EEE	P	P	P	P	P	P	P	A	P	P	9	
43	813919105001	P.DHEVENTHIRAN	II/EEE	P	P	P	P	P	P	P	P	P	P	10	
44	811219105301	A. VENKATRAMAN	II/EEE	P	P	P	P	P	A	P	P	P	P	9	

Dehy Jeefer
VAC Coordinator

10/8/21
Dr. G. Balakrishnan, M.E., Ph.D.,
Principal

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Gr. Ma lathi
HoD/EEE



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



Name of the Student:

Year/Sem:

AU Register Number:

Value Added Course

“Solar Photovoltaic System Design”

MULTIPLE CHOICE QUESTIONS (25X1 = 25 Marks)

1. A solar cell converts light energy into _____
a) Electrical energy b) Thermal energy c) Sound energy d) Heat energy
2. There are three types of the solar cells.
a) True b) False
3. Series and parallel combination of the solar cell is known as _____
a) Solar array b) Solar light c) Solar sight d) Solar eye
4. Full form of FF in the solar field is _____
a) Form factor b) Fill factor c) Face factor d) Fire factor
5. Calculate Fill factor using the data: $P_{max}=15$ W, $V_{oc}=18$ V, $I_{sc}=4$ A.
a) .65 b) .59 c) .20 d) .98
6. Material used for making solar cell is _____
a) Silicon b) Carbon c) Sodium d) Magnesium
7. The term photo voltaic comes from _____
a) Spanish b) Greek c) German d) English
8. A typical output of a solar cell is
a) 0.1 V b) 0.26 V c) 1.1 V d) 2 V
9. The efficiency of a solar cell may be in the range
a) 2 to 5% b) 10 to 15% c) 30 to 40% d) 70 to 80%
10. A module in a solar panel refers to
a) Series arrangement of solar cells.
b) Series and parallel arrangement of solar cells.
b) Parallel arrangement of solar cells.
c) None of the above.


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

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(E) Status Institution by UGC



11. The current density of a photo voltaic cell ranges from

- a) 10 – 20 mA/cm² b) 40 – 50 mA/cm² c) 20 – 40 mA/cm² d) 60 – 100 mA/cm²

12. The function of a solar collector is to convert.....

- a) Solar Energy into Electricity b) Solar Energy radiation
c) Solar Energy thermal energy d) Solar Energy mechanical energy

13. What is the rate of solar energy reaching the earth surface?

- a) 1016 b) 865W c) 2854W d) 1912W

14. What is total amount of solar energy received by earth and atmosphere?

- a) 3.8 X 10²⁴ J/year b) 9.2 X 10²⁴ J/year
c) 5.4 X 10²⁴ J/year d) 2.1 X 10²⁴ J/year

15. The process of converting light (photons) to electricity (voltage) is called:

- a) PV effect. b) Solar cell. c) Radiation.

16....converts sunlight directly into solar power (electricity).

- a) Battery. b) Solar cell. c) Inverter.

17. The most expensive type of the solar cells is:

- a) Amorphous. b) Polycrystalline. c) Monocrystalline.

18. Which type of solar cells has highest efficiency?

- a) Amorphous. b) Polycrystalline. c) Monocrystalline.

19. 5-Which type of solar cells is more efficient in low lights:

- a) Amorphous. b) Polycrystalline. c) Monocrystalline.

20. All the electricity produced by the solar panels is produced as:


- a) AC b) DC c) both DC and AC.

21. The device which converts the DC to AC is:

- a) Transformer. b) Relay. c) Inverter.

22. Interactive PV systems operate:

- a) Stand alone. b) In parallel with the grid. c) None.


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



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University Chennai
NAAC Accredited, 2(F) Status Institution by UGC



23. The initial cost of PV systems is:

a) Low. b) Medium. c) High.

24. Energy production from PV systems depends on:

a) Location. b) Weather. c) Both a and b

25. The running cost of PV systems is:

a) High. b) Low. c) Medium.

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



Indra Ganesan

COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 3(F) Status Institution by UGC



Value Added Course

“Solar Photovoltaic System Design”

ANSWER KEY

1	a	6	a	11	b	16	b	21	c
2	a	7	b	12	c	17	c	22	b
3	a	8	b	13	a	18	c	23	c
4	b	9	b	14	a	19	a	24	c
5	c	10	c	15	a	20	b	25	b

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

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

VAC Coordinator

13.08.21

P. Dheventhiran

813919105001


II year / 04 sem

Solar Photovoltaic System Design

- 1) a) Electrical Energy
- 2) a) True
- 3) a) Solar array
- 4) b) Fill factor
- 5) c) 20
- 6) a) Silicon
- 7) b) Good
- 8) c) 1.1k
- 9) b) 10 to 15%
- 10) c) Series and Parallel arrangement solar cells
- 11) b) 40-50 mA/cm²
- 12) c) Solar energy thermal energy
- 13) a) 1016
- 14) b) 9.2×10^{24} J/year
- 15) a) PV effect
- 16) b) Solar cell
- 17) e) Monocrystalline
- 18) b) Polycrystalline
- 19) a) Amorphous
- 20) b) DC
- 21) e) Inverters
- 22) b) In parallel with grid
- 23) c) High
- 24) a) Location
- 25) b) Low

21

25


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

13-08-2021

Gayathri . K

811217105011

Solar photovoltaic system Design

IV - year EEE / 1st sem

1 (a) Electrical energy

2 (a) ~~True~~

3 (a) Solar array

4 (b) Fill factor

5 (c) ~~20~~

6 (a) Silicon

7 (b) ~~Crystalline~~

8 (c) ~~1.1~~

9 (b) 10 to 15%

10 (c) Series and parallel arrangement of solar cells

11 (b) 40-50 mA/cm^2

12 (c) solar energy thermal energy

13 (a) 10%

14 (b) 9.2×10^{21} / year

15 (a) PV effect

16 (b) Solar cell

17 (c) Monocrystalline

18 (b) polycrystalline

19 (a) Amorphous

20 (b) ~~DC~~

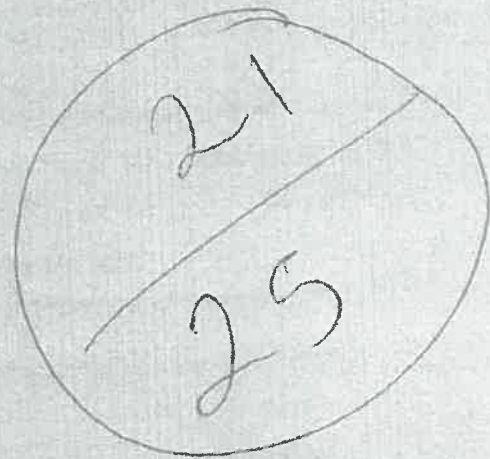
21 (c) Inverter

22 (b) In parallel with the grid

23 (c) High

24 (a) Location

25 (b) Low



~~100~~

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

13.08.21

P. Sivakumar

811218105008

III year / 06 sem

Solar Photovoltaic System Design

1. (a) Electrical energy
2. (a) True
3. (a) Solar array
4. (b) Fill factor
5. (c) .20
6. (a) Silicon
7. (b) Greek
8. (c) 1.1
9. (b) 10 to 15V
10. (c) Series and parallel arrangement of solar cells
11. (b) 40-50 mA/cm²
12. (c) Solar Energy thermal energy
13. (a) 1016
14. (b) 9.2×10^{24} J/year
15. (a) PV effect
16. (b) Solar cell
17. (c) Monocrystalline
18. (b) Polycrystalline
19. (a) Amorphous
20. (b) DC
21. (c) Inverter
22. (b) In parallel with the grid
23. (c) High
24. (a) located
25. (b) low

21
25



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

Principal

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road

Manikandam, Trichy-620 012.



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



Department of Electrical and Electronics Engineering

Academic Year 2020-2021 – Even Semester

VALUE ADDED COURSE ASSESSMENT SHEET

“Solar Photo Voltaic System Design”

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

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

S.NO	Register Number	Name	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK (100) (50% of A + 50% of B)
				No. of Hours Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
1	811217105005	ARUL JOY ASHA A	IV/EEE	30	100	20	80	90
2	811217105006	ARUN SEBASTIN P	IV/EEE	30	100	19	76	88
3	811217105007	BHARTHASARATHI M	IV/EEE	27	90	19	76	83
4	811217105008	CHITHRA P	IV/EEE	27	90	21	84	87
5	811217105009	DEEPIKA G	IV/EEE	27	90	19	76	83
6	811217105010	EZHUMALAI A	IV/EEE	27	90	19	76	83
7	811217105011	GAYATHRI K	IV/EEE	30	100	20	80	90
8	811217105012	GAYATHRI S	IV/EEE	27	90	21	84	87
9	811217105013	KANIMOZHI S	IV/EEE	27	90	19	76	83
10	811217105014	KEERTHANA S	IV/EEE	27	90	19	76	83
11	811217105015	KUMARIVALLI T	IV/EEE	30	100	21	84	92
12	811217105016	MADHUMITHA S	IV/EEE	27	90	20	80	85
13	811217105017	MANO K	IV/EEE	30	100	21	84	92

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

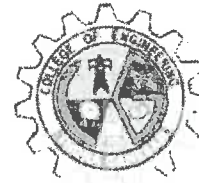
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



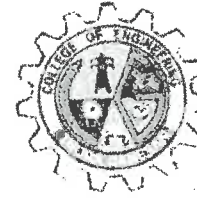
S.NO	Register Number	Name	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK (100) (50% of A + 50% of B)
				No. of Hours Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
14	811217105018	MEKALA M	IV/EEE	30	100	20	80	90
15	811217105020	PAVITHRA S	IV/EEE	27	90	19	76	83
16	811217105021	PRAVEEN RAJ R	IV/EEE	24	80	20	80	80
17	811217105022	RAJASEKAR.N V	IV/EEE	24	80	21	84	82
18	811217105023	REVATHI P	IV/EEE	27	90	22	88	89
19	811217105024	RISHON GURU M	IV/EEE	30	100	20	80	90
20	811217105026	SANTHOSH K	IV/EEE	27	90	21	84	87
21	811217105027	SRIKUMAR M S	IV/EEE	24	80	20	80	80
22	811217105028	SRI LOGESH C	IV/EEE	27	90	21	84	87
23	811217105029	SUBHA T	IV/EEE	30	100	20	80	90
24	811217105031	VALARMATHI C	IV/EEE	30	100	21	84	92
25	811217105032	VISWANATH R	IV/EEE	30	100	19	76	88
26	811217105301	SANJEEV KUMAR R	IV/EEE	30	100	21	84	92
27	811218105001	ARUN PRAVEEN RAJ A	III/EEE	27	90	20	80	85
28	811218105002	HARIHARAN M	III/EEE	27	90	19	76	83
29	811218105003	INBARAJ A	III/EEE	27	90	19	76	83
30	811218105004	JEYA STEPHEN S	III/EEE	27	90	20	80	85
31	811218105005	MANIKANDAN N	III/EEE	30	100	21	84	92
32	811218105006	PADMANABAN A	III/EEE	27	90	19	76	83



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 3(F) Status Institution by UGC




S.NO	Register Number	Name	YEAR/ BRANCH	Attendance Details		VAC-MCQ TEST		OVERALL MARK (100) (50% of A + 50% of B)
				No. of Hours Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
33	811218105007	SASIKUMAR R	III/EEE	24	80	21	84	82
34	811218105008	SIVAKUMAR P	III/EEE	27	90	20	80	85
35	811218105009	VEERA RAGAVAN A	III/EEE	30	100	21	84	92
36	811218105010	YUVARAJ S	III/EEE	27	90	20	80	85
37	811219105002	M.BARATH	II/EEE	30	100	19	76	88
38	811219105003	A.MANIKANDAN	II/EEE	30	100	20	80	90
39	811219105005	C.PONNALAGU	II/EEE	30	100	21	84	92
40	811219105006	A.SALAMON	II/EEE	27	90	21	84	87
41	811219105007	M.SARAVANAKUMAR	II/EEE	24	80	20	80	80
42	811219105008	K.SOLAIMATHI	II/EEE	27	90	21	84	87
43	813919105001	P.DHEVENTHIRAN	II/EEE	30	100	20	80	80
44	811219105301	A. VENKATRAMAN	II/EEE	27	90	19	76	83


VAC Coordinator


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

Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.--


HOD/EEE






Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



Report on Value Added Course

Title:	"Solar Photo Voltaic System Design"				
Resource Persons:	S.Sridhar, Trainer, Micro win Automation, Trichy-621216				
Date of conduct from :	09.08.2021	To:	13.08.2021	Duration:	30 Hours
Organized Department :	Electrical and Electronics Engineering				
Participant Year:	2,3,4	No. of Students Registered :	44		
Venue:	online mode Google Meet: meet.google.com/333-5625-245				
Outcome of Value Added Course (VAC): At the end of the Course, Students can able to					
<ol style="list-style-type: none">1. Develop a comprehensive technological understanding in solar PV system components.2. Develop understanding on the PV plant design and select suitable technologies.3. Design and simulate a PV power plant using software tool.4. Plan project implementation, operation and maintenance.5. Carry out techno-economic-environmental performance evaluation of a solar PV power plant					
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/EEE		 Principal	

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

Principal

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road

Manikandam, Trichy-620 012.



Indra Ganesan

COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC

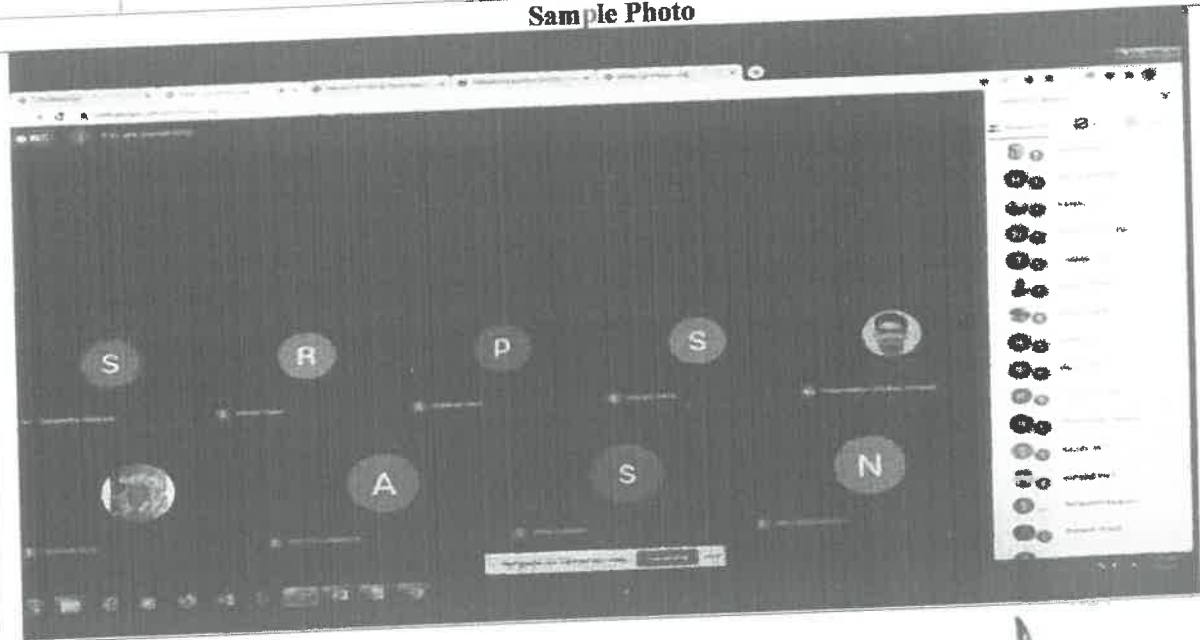


Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Sample Photo of Value Added Course

Title:	"Solar Photo Voltaic System Design"				
Resource Persons:	S.Sridhar, Trainer, Micro win Automation, Trichy-621216				
Date of conduct from :	09.08.2021	To:	13.08.2021	Duration:	30 Hours
Organized Department :	Electrical and Electronics Engineering				
Participant Year:	2,3,4			No. of Students Registered :	44
Venue:	online mode Google Meet: meet.google.com/333-5625-245				

Sample Photo



Devy Jeyaraj
VAC Coordinator

Gr. Ma lathi
HOD/EEE

[Signature]
Principal




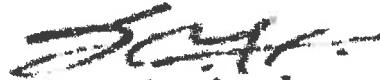
Indra Ganesan
COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



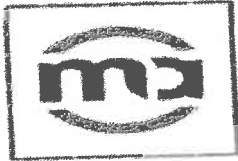
CERTIFICATE OF PARTICIPATION

This is to certify that Mr.SANTHOSH K, IV Year, EEE has successfully completed the Value Added Course on “Solar Photovoltaic System Design” organized by Department of Electrical & Electronics Engineering and IQAC of our Institution in Association with Micro win Automation, from 9th August 2021 to 13th August 2021 (5days) during the Academic year 2020-2021.


Microwin Automation
Mr.C.Syam Kumar
Chief Executive Officer.


Principal
IGCE


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




Indra Ganesan
COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, Z(F) Status Institution by UGC




CERTIFICATE OF PARTICIPATION

This is to certify that Mr. ARUN PRAVEEN RAJ A, III Year, EEE has successfully completed the Value Added Course on “Solar Photovoltaic System Design” organized by Department of Electrical & Electronics Engineering and IQAC of our Institution in Association with Micro win Automation, from 9th August 2021 to 13th August 2021 (5days) during the Academic year 2020-2021.


Micro win Automation
Mr.C.Syam Kumar
Chief Executive Officer.


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


Principal
IGCE



Indra Ganesan


COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC



CERTIFICATE OF PARTICIPATION

This is to certify that Mr. P.DHEVENTHIRAN, II Year, EEE has successfully completed the Value Added Course on “Solar Photovoltaic System Design” organized by Department of Electrical & Electronics Engineering and IQAC of our Institution in Association with Micro win Automation, from 9th August 2021 to 13th August 2021 (5days) during the Academic year 2020-2021.


Micro win Automation
Mr.C.Syam Kumar
Chief Executive Officer.


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


Principal
IGCE