



SRI BHARATHI

ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
Kaikkurichi, Pudukkottai -622 303

www.sbec.edu.in

NAAC DOCUMENTS



Quality Indicator Frame Work

Criterion – 1

CURRICULAR ASPECTS

Submitted by

IQAC

Internal Quality Assurance Cell

Sri Bharathi Engineering College for Women



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

KAIKKURUCHI, PUDUKOTTAI – 622 303

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2020-2021/ EVEN 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:	EMERGING TECHNOLOGIES OF BIO SIGNAL PROCESSING IN VLSI				
Resource Person:	Mr.S.SRINIVASAN, Managing Director, Spiderman PVC Private Limited, Chennai - 600060				
Date of conduct from :	26.04.2021	To:	30.04.2021	Duration:	30 Hours
Organized Department :	ELECTRONICS AND COMMUNICATION ENGINEERING				
Participant Year:	2/ 3 /4	Semester:	EVEN	No. of Students Registered :	40
Venue:	Google Meet:meet.google.com/cex-eijs-gse.				

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2020-2021/EVEN SEMESTER

DEPARTMENT CIRCULAR

Date: 19.04.2021

Value Added Course offered by the Department of ECE will be conducted for Second, Third and Final year students on “**Emerging Technologies of Bio Signal Processing in VLSI**” in association with Spiderman PVC Private Limited, from 26.04.2021 to 30.04.2021 through online. Certificates will be issued to the eligible participants at the end of the course. The resource person details are shown in the following table.

S.No	Name of the Course	Resource Person
1	Emerging Technologies of Bio Signal Processing in VLSI	Mr.S.SRINIVASAN, Managing Director, Spiderman PVC Private Limited, No 17, Madhavaram, Chennai - 600060 Tamil Nadu. Mail.Id: spidermanview@gmail.com Google Meet: meet.google.com/cex-eijs-gse

Cc:

- Principal's Office
- IQAC Coordinator
- Class In charges- II ,III &IV Year
- II ,III & IV Year ECE Students
- Notice Board


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Dr. S.THILAGAVATHI M.E., Ph.D.,
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
ACADEMIC YEAR 2020-2021/EVEN SEMESTER


Value Added Course on “Emerging Technologies of Bio Signal Processing In VLSI”

SYLLABUS

S.NO	TOPIC COVERED	DURATION (in hours)	DATE
1	Bio Signals(eg.,EEG,ECG,PCG,PPG,EMG,ENG) processing	3	26.4.2021
2	Wavelets and Fourier Analysis & Soft Computing Techniques	3	26.4.2021
3	Neural networks	3	27.4.2021
4	Fuzzy logic, Genetic Algorithms	3	27.4.2021
5	VLSI Signal processing	3	28.4.2021
6	System partitioning and level testing Xilinx , Cadence ,Modelsim etc in VLSI Design	3	28.4.2021
7	Physical design layout, Verification in VLSI Technology	3	29.4.2021
8	Image compression and registration,Image quality assessment	3	29.4.2021
9	Image segmentation and enhancement	3	30.4.2021
10	Image Retrieval and Analysis,Video Image analysis and processing	3	30.4.2021
Total Hours		30	


VAC Coordinator


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DEPARTMENT OF ELECTRONICS AN COMMUNICATIONENGINEERING

ACADEMIC YEAR EVEN SEMESTER (2020-2021)

STUDENT PARTICIPATION LIST FOR VALUE ADDED PROGRAM

Emerging Technologies of Bio Signal Processing in VLSI

S.NO	REG.NO	NAME	YEAR & BRANCH
1	912619106001	AASHIMA M	II & ECE
2	912619106002	ANANTHI P	II & ECE
3	912619106004	JAFFARNISHA R	II & ECE
4	912619106005	MAHESWARI K	II & ECE
5	912619106006	MANISHA S	II & ECE
6	912619106007	MEGAVADHANA A	II & ECE
7	912619106008	PRIYANGA R	II & ECE
8	912619106009	RAGAVI V	II & ECE
9	912619106010	RAJAPRABA M	II & ECE
10	912619106011	SASIKA K	II & ECE
11	912618106001	ANUSHAA S	III & ECE
12	912618106002	ARIVARASI A	III & ECE
13	912618106003	ASMATH HAZEENA N	III & ECE
14	912618106004	ATCHAYA R	III & ECE
15	912618106005	JAYAPRIYA T	III & ECE
16	912618106006	JAYASRI M	III & ECE
17	912618106007	NAGALAKSHMI P	III & ECE
18	912618106008	NAVITHRA D	III & ECE
19	912618106009	ROHINI K	III & ECE
20	912618106010	SOUNTHARYA P	III & ECE
21	912618106012	THAIYAL NAYAGI K	III & ECE
22	912618106701	JANANI.R	III & ECE
23	912617106001	ABIRAMI S	IV& ECE
24	912617106002	ABISHEKA S	IV& ECE

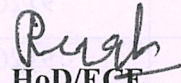
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S.NO	REG.NO	NAME	YEAR & BRANCH
25	912617106003	ATSHAYA R	IV& ECE
26	912617106004	BAVADHARANI A	IV& ECE
27	912617106005	BHUVANESHWARI B	IV& ECE
28	912617106006	DHIVYA L	IV& ECE
29	912617106007	GOWSALYA D	IV& ECE
30	912617106009	INDHUMATHI S	IV& ECE
31	912617106010	KANIMOZHI D	IV& ECE
32	912617106011	KAVYA C	IV& ECE
33	912617106012	KEERTHANA G	IV& ECE
34	912617106013	MAHESHWARI G	IV& ECE
35	912617106014	MANOHARI M	IV& ECE
36	912617106015	MARAGATHALAKSHMI S	IV& ECE
37	912617106017	SAFRIN NISHA S	IV& ECE
38	912617106018	SUBASHINI M	IV& ECE
39	912617106019	SUBASHINI T	IV& ECE
40	912617106020	VINTHIYA R	IV& ECE


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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
ACADEMIC YEAR EVEN SEMESTER (2020-2021)

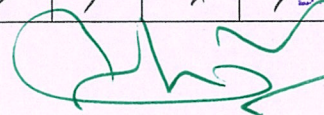
ATTENDANCE SHEET FOR VALUE ADDED COURSE-EMERGING TECHNOLOGIES OF BIO SIGNAL PROCESSING IN VLSI

S.NO	REG. NO	NAME	YEAR/ BRANCH	26.04.2021		27.04.2021		28.04.2021		29.04.2021		30.04.2021		NO. OF SESSIONS ATTENDED
				F.N	A.N	F.N	A.N	F.N	A.N	F.N	A.N	F.N	A.N	
1	912619106001	AASHIMA M	II /ECE	/	/	/	/	/	/	/	/	/	/	10
2	912619106002	ANANTHI P	II /ECE	/	/	/	/	/	/	/	/	/	/	10
3	912619106004	JAFFARNISHA R	II /ECE	/	/	/	/	/	/	/	/	/	/	10
4	912619106005	MAHESWARI K	II /ECE	a	/	/	/	/	/	/	/	/	/	9
5	912619106006	MANISHA S	II /ECE	/	/	/	/	/	/	/	/	/	/	10
6	912619106007	MEGAVADHANA A	II /ECE	/	/	/	/	/	/	/	/	/	/	10
7	912619106008	PRIYANGA R	II /ECE	/	/	/	/	/	/	/	/	/	/	10
8	912619106009	RAGAVI V	II /ECE	a	/	/	/	/	/	/	/	/	/	9
9	912619106010	RAJAPRABA M	II /ECE	/	/	/	/	a	/	/	/	/	/	9
10	912619106011	SASIKA K	II /ECE	/	/	/	/	/	/	/	/	/	/	10
11	912618106001	ANUSHAA S	III/ ECE	/	/	/	/	/	/	/	/	/	/	10

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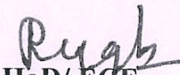
12	912618106002	ARIVARASI A	III/ ECE	/	/	/	/	/	/	/	/	/	/	/	10
13	912618106003	ASMATH HAZEENA N	III/ ECE	/	/	/	/	/	/	/	/	/	/	/	10
14	912618106004	ATCHAYA R	III/ ECE	/	/	/	/	/	/	/	/	/	/	/	10
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17	912618106007	NAGALAKSHMI P	III/ ECE	a	a	/	/	/	/	/	/	/	/	/	8
18	912618106008	NAVITHRA D	III/ ECE	/	/	/	/	/	/	/	/	/	/	/	10
19	912618106009	ROHINI K	III/ ECE	/	/	/	/	a	/	/	/	/	/	/	9
20	912618106010	SOUNTHARYA P	III/ ECE	/	/	/	/	/	/	/	/	/	/	/	10
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27	912617106005	BHUVANESHWARI B	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10
28	912617106006	DHIVYA L	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10
29	912617106007	GOWSALYA D	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10
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31	912617106010	KANIMOZHI D	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10
32	912617106011	KAVYA C	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10
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37	912617106017	SAFRIN NISHA S	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10
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39	912617106019	SUBASHINI T	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10
40	912617106020	VINTHIYA R	IV/ECE	/	/	/	/	/	/	/	/	/	/	/	10


VAC Coordinator


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(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)Kaikkurichi,
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Report on Value Added Course

Title:	Emerging Technologies of Bio Signal Processing in VLSI				
Resource Person:	Mr.S.SRINIVASAN, Managing Director, Spiderman PVC Private Limited, No 17, Madhavaram, Chennai - 600060				
Date of conduct from :	26.04.2021	To:	30.04.2021	Duration:	30 Hours
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Venue:	online mode Google Meet: meet.google.com/cex-eijs-gse				

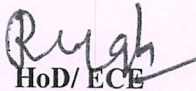
Outcome of Value Added Course (VAC) :At the end of Course ,Students can able to

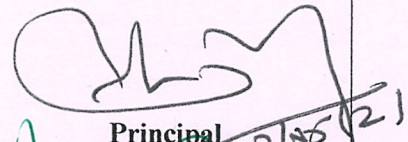
- Apply appropriate signal processing techniques in analysing various bio-signals.
- Explain and employ sampling and quantization procedures for digitally recording physiological data
- Develop measurement systems for bio-signals and its signal conditioning circuits.
- Understand and explain the basic concept of VLSI signal processing and its various components
- Understand advanced statistical tools and numerical methods to describe the temporal dynamics of biomedical signals.
- No. of students successfully completed the VAC course is 40 Students based on the following Assessment process.

Assessment Process

- Students securing **more than 60% on total score** and secured more than **75%** in attendance is eligible to receive the certificate for the VAC course conducted
- Total Score = $(0.5 * \text{Attendance in VAC out of 100 percentage} + 0.5 * \text{Test mark in VAC out of 100 marks})$


VAC Coordinator


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HOD / ECE


Principal 03/05/21

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SPIDERMAN PVC TECHNOLOGY PRIVATE LIMITED
NO:17, MADHAVARAM, CHENNAI-600060

CERTIFICATE OF PARTICIPATION

This is to Certify that


Ms. RAGAVI.V, II ECE from Sri Bharathi Engineering College for Women

has successfully completed 5 days Value Added Course on
Emerging Technologies of Bio Signal Processing in VLSI

Conducted from 26.04.2021 to 30.04.2021 during the academic year 2020-2021.

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Kaikkurchi - 622 303, Pudukkottai Dt.

Managing Director


SPIDERMAN
TECH. PVT. LTD.

SPIDERMAN PVC TECHNOLOGY PRIVATE LIMITED
NO:17, MADHAVARAM, CHENNAI-600060

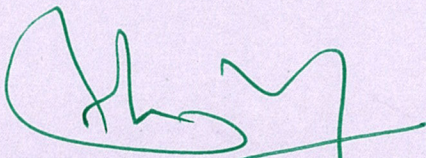
CERTIFICATE OF PARTICIPATION

This is to Certify that

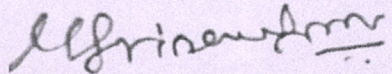
Ms. ARIVARASI.A, III ECE from Sri Bharathi Engineering College for Women

has successfully completed 5 days Value Added Course on
Emerging Technologies of Bio Signal Processing in VLSI

Conducted from 26.04.2021 to 30.04.2021 during the academic year 2020-2021.



Dr. S. THILAGAVATHI M.E., Ph.D.,
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Kaikkurichi - 622 305, Pudukkottai Dt.



Managing Director



SPIDERMAN PVC TECHNOLOGY PRIVATE LIMITED
NO;17, MADHAVARAM,CHENNAI-600060

CERTIFICATE OF PARTICIPATION

This is to Certify that

Ms. SAFRIN NISHA.S, IV ECE from Sri Bharathi Engineering College for Women

has successfully completed 5 days Value Added Course on

Emerging Technologies of Bio Signal Processing in VLSI

Conducted from 26.04.2021 to 30.04.2021 during the academic year 2020-2021.

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Managing Director



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Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

Name of the Student :

Year/Sem:

AU Register Number:

Value Added Course on Emerging Technologies of Bio Signal Processing in VLSI

MCQ QUESTIONS (25X1 = 25 Marks)

1. In digital system if h (transfer function) and y (output) find X means
 - a) Analyze
 - b) Control
 - c) Design
 - d) All the above
- 2..... Is a record of the amplified electrical activity generated by neurons in the brain
 - a) EMG
 - b) EEG
 - c) MRI
 - d) None of the above
- 3..... Is a collective term used to describe a number of contaminating voltage potential caused by eye movements and blinks
 - a) Ocular artifacts
 - b) Antifacts
 - c) EOG
 - d) EFG
4. Shannon Nyquist theorem $f_{\text{sampling}} \geq 2 \dots\dots\dots$
 - a) f_{max}
 - b) f_{min}
 - c) both a and b
 - d) None of the above
5. The shape of signal repeats with an interval
 - a) Periodic
 - b) Aperiodic
 - c) Predictability
 - d) All the above
- 6..... Is a symmetric periodic function with period 2π
 - a) DFT
 - b) Convolution
 - c) Correlation
 - d) Regression
- 7.....filter is used to remove high frequency noise with minimal loss of signal components in the pass band
 - a) Moving average filter
 - b) offset
 - c) Median
 - d) Detrending
- 8.....Measures the similarity of two series as a function of the long of one relative to other
 - a) Covariance
 - b) Mean square
 - c) Cross Correlation
 - d) Coherent spectral density


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9. Processing of reducing the amount of data in a given signal to i order to lower resources usage Such as data storage space
- a) Envelop Detection
 - b) Compression
 - c) Estimation
 - d) All the above
10. Process of reducing the sampling rate of signal is called
- a) Up sampling
 - b) Interpolation
 - c) Down sampling
 - d) Bandwidth
- 11.....is a to for Blind source separation
- a) IBA
 - b) IFA
 - c) ICA
 - d) ICD
- 12..... Filtering is a process of implementing a set of mathematical equation which implements a prediction corrector type of estimator
- a) Kalman
 - b) Kelvin
 - c) both a and b
 - d) None of the above
13. Which techniques I'd used to reduce the sampling period in VLSI digital signal processing
- a) Unfolding
 - b) Throughput
 - c) Aliasing
 - d) Filter
- 14..... network safe biologically inspired network that are useful in application area such as pattern recognition and classification
- a) computer Network
 - b) Mobile Network
 - c) Sensor network
 - d) Artificial network
- 15..... represent s the distribution of power as a function of frequency
- a) PDF
 - b) Entropy
 - c) PSD
 - d)None of the above
16. The entropy is into pretended as a function ofabout the event
- a) Certainty
 - b) Uncertainty
17. Signal processing is a ways to ----- signal in its original medium or an abstract medium.
- a) Finding
 - b) Manipulating
 - c) Converting
 - d) Analyzing
18. Signal generated via physical phenomenon are-----
- a)Digital
 - b)Analog
 - c) Both a and b


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Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

19. The real-(complex) valued samples must be -----fit into internal word length.
- Sampled
 - Quantized
 - Estimated
 - Converted
20. The effect of over sampling is also called.....
- Aliasing
 - Filtering
 - Quantization
21. The interface between an analog signal and a processor is digital
- D/A Converter
 - A/D Converter
 - Modulator
 - Demodulator
22. Telegraph signals are examples of
- Digital signals
 - Analog signals
 - Impulse signals
 - Pulse train
23. Roll-off factor is
- The bandwidth occupied beyond the Nyquist Bandwidth of the filter
 - The performance of the filter or device
 - Aliasing effect
 - None of the above
24. DTFT is the representation of
- Periodic Discrete time signals
 - Aperiodic Discrete time signals
 - Aperiodic continuous signals
 - Periodic continuous signals
25. Decimation is a process in which the sampling rate is _____.
- enhanced
 - stable
 - reduced
 - unpredictable



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2020-2021/EVEN SEMESTER

Value Added Course on “Emerging Technologies of Bio Signal Processing in VLSI”

MCQ ANSWER KEY

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

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Sri Bharathi Engineering college for women

Department of ECE

Value added course (26.04.2021 to 30.04.2021)

Name: Jaffar Nisha.R

Reg no: 4126 1910 6004

Year: II

Sem: IV

Answers

- 1) d ✓
- 2) a ✗
- 3) a ✓
- 4) c ✓
- 5) a ✓
- 6) a ✓
- 7) b ✗
- 8) c ✓
- 9) b ✓
- 10) c ✓
- 11) c ✓
- 12) a ✓
- 13) c ✓

- 14) d ✓
- 15) c ✓
- 16) B ✓
- 17) c ✓
- 18) b ✓
- 19) E ✗
- 20) c ✓
- 21) b ✓
- 22) b ✓
- 23) a ✓
- 24) c ✓
- 25) c ✓

22

25


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Department of ECE

Value Added Course (26.04.2021 to 30.04.2021)

Name: Subashini.M

Reg. No: 912617106018

Year: IV

Sem: VIII

Answers

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

19
25

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Department of ECE

Value added course (26.04.2020 to 30.04.2021)

Name: Janani. R

Reg No: 912618106701

Year: III

Sem: VI

Answers

- 1) d ✓
- 2) b ✓
- 3) a ✓
- 4) c ✓
- 5) a ✓
- 6) c X
- 7) a ✓
- 8) c ✓
- 9) a X
- 10) c ✓
- 11) c ✓
- 12) a ✓
- 13) c ✓

- 14) c X
- 15) c ✓
- 16) b ✓
- 17) c ✓
- 18) b ✓
- 19) c X
- 20) c ✓
- 21) b ✓
- 22) a X
- 23) a ✓
- 24) c ✓
- 25) d X

19
25


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ACADEMIC YEAR EVEN SEMESTER (2020-2021)

MARK SHEET FOR VALUE ADDED COURSE- EMERGING TECHNOLOGIES OF BIO SIGNAL PROCESSING IN VLSI

S.NO	REGISTER NUMBER	NAME	YEAR & BRANCH	Attendance (A)		VAC –MCQ TEST (B)		OVERALL MARK(100) (50% of A + 50% of B)
				No.of Sessions Attended	Marks (100)	No.of Correct Answer	Marks (100)	
1	912619106001	AASHIMA M	II /ECE	10	100	19	76	88
2	912619106002	ANANTHI P	II /ECE	10	100	18	72	86
3	912619106004	JAFFARNISHA R	II /ECE	10	100	22	88	94
4	912619106005	MAHESWARI K	II /ECE	9	90	20	80	85
5	912619106006	MANISHA S	II /ECE	10	100	19	76	88
6	912619106007	MEGAVADHANA A	II /ECE	10	100	18	72	86
7	912619106008	PRIYANGA R	II /ECE	10	100	20	80	90
8	912619106009	RAGAVI V	II /ECE	9	90	20	80	85
9	912619106010	RAJAPRABA M	II /ECE	9	90	18	72	81
10	912619106011	SASIKA K	II /ECE	10	100	19	76	88
11	912618106001	ANUSHAA S	III /ECE	10	100	22	88	94
12	912618106002	ARIVARASI A	III /ECE	10	100	19	76	88

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13	912618106003	ASMATH HAZEENA N	III /ECE	10	100	18	72	86
14	912618106004	ATCHAYA R	III /ECE	10	100	19	76	88
15	912618106005	JAYAPRIYA T	III /ECE	10	100	22	88	94
16	912618106006	JAYASRI M	III /ECE	10	100	18	72	86
17	912618106007	NAGALAKSHMI P	III /ECE	8	80	19	76	78
18	912618106008	NAVITHRA D	III /ECE	10	100	21	84	92
19	912618106009	ROHINI K	III /ECE	9	90	23	92	91
20	912618106010	SOUNTHARYA P	III /ECE	10	100	21	84	92
21	912618106012	THAIYAL NAYAGI K	III /ECE	10	100	23	92	96
22	912618106701	JANANIR	III /ECE	10	100	19	76	88
23	912617106001	ABIRAMI S	IV /ECE	9	90	19	76	83
24	912617106002	ABISHEKA S	IV /ECE	10	100	18	72	86
25	912617106003	ATSHAYA R	IV /ECE	10	100	23	82	91
26	912617106004	BAVADHARANI A	IV /ECE	10	100	18	72	86
27	912617106005	BHUVANESHWARI B	IV /ECE	10	100	18	72	86
28	912617106006	DHIVYA L	IV /ECE	10	100	19	76	88
29	912617106007	GOWSALYA D	IV /ECE	10	100	18	72	86
30	912617106009	INDHUMATHI S	IV /ECE	10	100	20	80	90
31	912617106010	KANIMOZHI D	IV /ECE	10	100	19	76	88
32	912617106011	KAVYA C	IV /ECE	10	100	18	72	86


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33	912617106012	KEERTHANA G	IV /ECE	10	100	18	72	86
34	912617106013	MAHESHWARI G	IV /ECE	10	100	19	76	88
35	912617106014	MANOHARI M	IV /ECE	10	100	18	72	86
36	912617106015	MARAGATHALAKSHMI S	IV/ECE	9	90	20	80	85
37	912617106017	SAFRIN NISHA S	IV/ECE	10	100	19	76	88
38	912617106018	SUBASHINI M	IV/ECE	10	100	18	72	86
39	912617106019	SUBASHINI T	IV/ECE	10	100	18	72	86
40	912617106020	VINTHIYA R	IV/ECE	10	100	23	82	91


VAC Coordinator


HoD/ ECE

HOD / ECE

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