

From

Chennai

Head of the Department

09-08-2019

Department of Biomedical Engineering

BIHER

To

The Dean

BIHER

Respected Sir

Sub: Approval to conduct a certificate program on "BIO SIGNAL PROCESSING"  
-reg

It has been planned by the Department of Biomedical Engineering to conduct a certificate program on "BIO SIGNAL PROCESSING" for the benefit of B. Tech Biomedical Engineering, B. Tech Industrial Biotechnology and B-Tech Genetic Engineering students from 26<sup>th</sup> August, 2019. The duration of the course is 30 hrs comprising of both theory and practical classes. I request you to kindly approve of the same.

Thanking you

Yours sincerely,





# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

Date: 12-08-2019

## SCHOOL OF BIOENGINEERING CIRCULAR

### Notification for Value added courses offered by the School of Bioengineering

The Department of Bio Medical Engineering, School of Bioengineering, is scheduled to offer a certificate program on “**Bio Signal Processing**” from 26/08/2019 for a period of 3 weeks. Interested students can approach Mr.S. Prasath, Assistant Professor and Course Coordinator, Department of Bio Medical Engineering, for registration and further details on or before 24<sup>th</sup> August 2019.

### Eligibility-II, III and IV B-Tech IBT, GE and BME

  
Course Coordinator

#### Copy to:

Vice Chancellor  
Pro Vice Chancellor  
Additional Registrar  
Deans  
CoE  
Heads of Departments

HOD



**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

**SCHOOL OF BIO-ENGINEERING**

**DEPARTMENT OF BIO MEDICAL ENGINEERING**

**CERTIFICATE PROGRAM ON BIO SIGNAL PROCESSING**

**2019-2020**

**COURSE CO-ORDINATOR DETAILS**

**Faculty Name: Mr. S. Prasath,**

Assistant Professor,

Department of Bio Medical Engineering.

**Email ID:** Mail.surendhar@gmail.com

**Mobile number:** 87545 81937

**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

**SCHOOL OF BIO-ENGINEERING**

**DEPARTMENT OF BIO MEDICAL ENGINEERING**

**2019-2020**

**VALUE ADDED COURSE SYLLABUS**

**BIO SIGNAL PROCESSING**

**MODULE 1**

Fourier transform for continuous signals. Energy spectrum, Properties (without proof), Gibbs phenomena, Auto and cross correlation. Discrete Fourier transforms. Properties (without proof), Inverse DFT, introduction to FFTIR & FIR Filters, Low pass, High Pass, Band Pass Filters using windows – Kaiser Windows. Sampling Theorem, aliasing Nyquist criteria, ADC's and DAC's.

**MODULE 2**

Digital signals and systems: Classification of systems causal, time varying, time invariant, lumped. Introduction to digital signals systems. Convolution, Auto-correlation and cross correlation , Use of Matlab signal processing toolbox on various real bio – medical signals.

**MODULE 3**

Introduction, Characteristics of Bio – Signals, Types of Signals, Measurement, Transformation. and reduction, computation of signal parameters that are diagnostically significant, stationary and non – stationary bio – signals, Application areas of Bio -Signals analysis – EEG, ECG, Phonocardiogram, Spiro Gram, Evoked Signals.

Total Contact Hour: 30

**SCHOOL OF BIO-ENGINEERING**

**DEPARTMENT OF BIO MEDICAL ENGINEERING**

**Certificate Program on Bio Signal Processing**

Session	Topic	Date	Duration (Hr)	Resource person
Session I	Fourier transform for continuous signals. Energy spectrum, Properties (without proof), Gibbs phenomena, Auto and cross correlation. Discrete Fourier transforms. Properties (without proof)	26.08.2019	4	R. Kishore Kanna
Session II	Inverse DFT, introduction to FFTIR & FIR Filters, Low pass, High Pass, Band Pass Filters using windows – Kaiser Windows. Sampling Theorem,	27.08.2019	4	R. Kishore Kanna
Session III	aliasing Nyquist criteria, ADC's and DAC's	28.08.2019	3	T. Manoj Prasath
Session IV	Digital signals and systems: Classification of systems causal, time varying, time invariant, lumped.	02.09.2019	4	T. Manoj Prasath
Session V	Introduction to digital signals systems. Convolution, Auto-correlation and cross correlation	03.09.2019	3	S. Prasath
Session VI	Use of Matlab signal processing toolbox on various real bio – medical signals.	04.09.2019	3	S. Prasath
Session VII	Introduction, Characteristics of Bio – Signals, Types of Signals, Measurement, Transformation.	09.09.2019	3	Dr.F.Emerson Solomon
Session VIII	reduction, computation of signal parameters that are diagnostically significant, stationary and non – stationary bio – signals	10.09.2019	3	S. Geetha
Session IX	Application areas of Bio -Signals analysis – EEG, ECG, Phonocardiogram, Spiro Gram, Evoked Signals.	11.09.2019	3	S. Geetha

**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**  
**SCHOOL OF BIO-ENGINEERING**  
**DEPARTMENT OF BIO MEDICAL ENGINEERING**  
**CERTIFICATE PROGRAM ON BIO SIGNAL PROCESSING**  
**STUDENTS NAME LIST**

S.NO	REG.NO	NAME
1.	U17BM001	Sudhanraj J
2.	U17BM002	Keerthana N
3.	U17BM003	Raabiya Shareef A
4.	U17BM004	Karthika S
5.	U17BM005	Suprava Paul
6.	U17BM006	Kartic S
7.	U17BM007	Divine Winfred W
8.	U17BM008	Sorakayapeta R Manjusri
9.	U17BM009	Jeevaraj S
10.	U17BM010	B Karthikeyan
11.	U17BM011	V Varatharajan
12.	U17BM012	Vinodhini S
13.	U17BM013	Naveen Kumar M
14.	U17BM014	Dinesh Kumar R
15.	U17BM015	Mathankumar G K
16.	U17BM016	Ignatius Arun Sinjin G
17.	U17BM017	Debabrata Bandyopadhyay
18.	U17BM018	Supratik Nandi
19.	U17BM019	Kalyaneswar Mishra
20.	U17BM020	Dhayanithi J
21.	U17BM021	Akash Kumar T
22.	U17BM022	Nithishkumar G
23.	U17BM023	Lokesh V
24.	U17BM024	Afreen Banu A
25.	U17BM026	Bharkavi M S
26.	U17BM028	Sheeba Alexia B
27.	U17BM029	Jeeva G
28.	U17BM030	Swedha S
29.	U17AC001	VICKRANTH M
30.	U17AC002	MANI KANDAN N
31	U17AC003	HARINISRI REKHA G
32	U17AC004	VIGNESWARAN M
33	U17AC005	KODURI MERCY GRACE .
34	U17AC006	VIMAL KUMAR A
35	U17AC007	IRENI POORNIMA
36	U17AC008	VISHNU V
37	U17AC009	PAVAN KALYAN G
38	U17AC010	ASHWINI B
39	U17AC011	BOOMIBALAN B

40	U17AC012	MARIA JOSEPH M
41	U17AC013	LOGESH G
42	U17AC014	BIRUNTHAA C G
43	U17AC015	GALI KOTESH
44	U17AC016	KALAIRAJAN T
45	U17AC018	GUNAPRIYA D
46	U17AC019	RIMMALAPUDI REVATHI
47	U17AC020	DURGA R
48	U17AC021	KAMALASH V B
49	U17BR001	KAMALI V
50	U17BR002	RAJALAKSJNI E
51	U17BR003	PADMAPRIYA R
52	U17BR004	PREETHI P

**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**  
**SCHOOL OF BIO-ENGINEERING**  
**DEPARTMENT OF BIO MEDICAL ENGINEERING**  
**CERTIFICATE PROGRAM BIO SIGNAL PROCESSING (2019-2020)**

**Students Result**

S.NO	REG.NO	NAME	RESULT
1.	U17BM001	Sudhanraj J	S
2.	U17BM002	Keerthana N	S
3.	U17BM003	Raabiya Shareef A	A
4.	U17BM004	Karthika S	S
5.	U17BM005	Suprava Paul	S
6.	U17BM006	Kartic S	A
7.	U17BM007	Divine Winfred W	S
8.	U17BM008	Sorakayapeta R Manjusri	S
9.	U17BM009	Jeevaraj S	S
10.	U17BM010	B Karthikeyan	S
11.	U17BM011	V Varatharajan	S
12.	U17BM012	Vinodhini S	S
13.	U17BM013	Naveen Kumar M	S
14.	U17BM014	Dinesh Kumar R	S
15.	U17BM015	Mathankumar G K	S
16.	U17BM016	Ignatius Arun Sinjin G	A
17.	U17BM017	Debabrata Bandyopadhyay	S
18.	U17BM018	Supratik Nandi	S
19.	U17BM019	Kalyaneswar Mishra	S
20.	U17BM020	Dhayanithi J	S
21.	U17BM021	Akash Kumar T	S
22.	U17BM022	Nithishkumar G	S
23.	U17BM023	Lokesh V	S
24.	U17BM024	Afreen Banu A	S
25.	U17BM026	Bharkavi M S	S
26.	U17BM028	Sheeba Alexia B	S
27.	U17BM029	Jeeva G	S
28.	U17BM030	Swedha S	S
29.	U17AC001	VICKRANTH M	S
30.	U17AC002	MANI KANDAN N	S
31.	U17AC003	HARINISRI REKHA G	S
32.	U17AC004	VIGNESWARAN M	S
33.	U17AC005	KODURI MERCY GRACE .	S
34.	U17AC006	VIMAL KUMAR A	S
35.	U17AC007	IRENI POORNIMA	A
36.	U17AC008	VISHNU V	S
37.	U17AC009	PAVAN KALYAN G	S
38.	U17AC010	ASHWINI B	S
39.	U17AC011	BOOMIBALAN B	S
40.	U17AC012	MARIA JOSEPH M	S



41	U17AC013	LOGESH G	S
42	U17AC014	BIRUNTHAA C G	A
43	U17AC015	GALI KOTESH	S
44	U17AC016	KALAIRAJAN T	S
45	U17AC018	GUNAPRIYA D	S
46	U17AC019	RIMMALAPUDI REVATHI	S
47	U17AC020	DURGA R	A
48	U17AC021	KAMALASH V B	S
49	U17BR001	KAMALI V	S
50	U17BR002	RAJALAKSJMI E	S
51	U17BR003	PADMAPRIYA R	S
52	U17BR004	PREETHI P	S

**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

**SCHOOL OF BIOENGINEERING**

**DEPARTMENT OF BIOMEDICAL ENGINEERING**

Name : Boomibalan.B

Register Number : U17AC011

Academic year: 2019-2020

Name of the course offered : Certificate program on "Biosignal processing".

**Student Feedback**

S.No	Criteria	Rating				
		Excellent	Very Good	Good	Fair	Satisfactory
1	Course content	✓				
2	Skill development	✓				
3	Motivation		✓			
4	Regularity of the faculty		✓			
5	Coverage of the syllabus	✓				
6	Resourse person interaction with students		✓			
7	Outcome	✓				
8	Individual Attention	✓				

Signature of the Course co-ordinator

Signature of the Student

**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

**SCHOOL OF BIOENGINEERING**

**DEPARTMENT OF BIOMEDICAL ENGINEERING**

Name : Sudhanraj - J

Register Number : U17BM001

Academic year: 2019 - 2020

Name of the course offered : Certificate program on "BIO SIGNAL PROCESSING"

**Student Feedback**

S.No	Criteria	Rating				
		Excellent	Very Good	Good	Fair	Satisfactory
1	Course content	✓				
2	Skill development		✓			
3	Motivation	✓				
4	Regularity of the faculty	✓				
5	Coverage of the syllabus		✓			
6	Resource person interaction with students	✓				
7	Outcome		✓			
8	Individual Attention	✓				

Signature of the Course co-ordinator

Signature of the Student



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## SCHOOL OF BIOENGINEERING

### CERTIFICATE PROGRAM ON BIO SIGNAL PROCESSING

CERTIFICATE

This is to certify that Mr Ignatius Arun Sinjin G has attended three weeks **Certificate Program on Bio Signal Processing** conducted by the Department of Biomedical Engineering at Bharath Institute of Higher Education and Research, Chennai, India during 26<sup>th</sup> August to 11<sup>th</sup> September 2019.

  
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