

ANNAI MATHAMMAL SHEELA ENGINEERING COLLEGE
COURSE DELIVERY PLAN

Name of the Department: **EEE**

Name of the Staff: **RAJA.T**

Sub Code & Name: **EI2311 BIOMEDICAL INSTRUMENTATION** Year / SEM: **III / VI**

UNIT-1 PHYSIOLOGY AND TRANSDUCERS

Lect. no	Date Planed	Topics to be covered	Time required (periods)	Teaching Methods	Teaching Aids	Books / Journals Referred
1	22.06.15	Cell and its structure, Resting and Action potential	1	L	CB	C,B
2	23.06.15	Nervous system	1	L	CB,PP	C,B
3	24.06.15 25.06.15	Synapse, Transmitters and Neural communication	2	L	CB	C,B
4	26.06.15 27.06.15	Cardiovascular system, Respiratory system	2	L	CB	A,C
5	29.06.15	Basic components of a biomedical system	1	L	CB	A,C
6	30.06.15 01.07.15	Transducers, Selection criteria ,Piezo electric, Ultrasonic transducers	2	L	CB,VF	B,C (www.iitm.ac.in)
7	03.07.15 06.07.15	Temperature Measurements, Fibre optic temperature sensors.	2	L	CB,VF	B,C (www.iitm.ac.in)

UNIT –II ELECTRO – PHYSIOLOGICAL MEASUREMENTS

Lect. No	Date Planed	Topics to be covered	Time required (periods)	Teaching Methods	Teaching Aids	Books /Journals Referred
1	07.07.15 08.07.15	Electrodes, Limb electrodes, Floating electrodes	2	L	CB,PP	C,D
2	09.07.15	Pregelld disposable electrodes, Micro needle and Surface electrodes	1	L	CB	A,C
3	10.07.15	Preamplifiers Differential amplifiers	1	L	CB	D,C
4	13.07.15	Chopper amplifiers, Isolation amplifier	1	L	CB	C,B
5	14.07.15	ECG , EEG, EMG , ERG	1	L	CB,VF	D,C (www.iitm.ac.in)
6	15.07.15	Lead systems and Recording methods, Typical waveforms	1	L	CB	C,A
7	16.07.15 20.07.15	Electrical safety in medical environment: Shock hazards	2	L	CB	B.C

8	23.07.15	Leakage current, Instruments for checking	1	L	CB	C,A
9	24.07.15	Safety parameters of biomedical equipments	1	L	CB	C,B

UNIT –III NON-ELECTRICAL PARAMETER MEASUREMENTS

Lect. No	Date Planed	Topics to be covered	Time required (periods)	Teaching Methods	Teaching Aids	Books /Journals Referred
1	25.07.15 27.07.15	Measurement of blood pressure, Cardiac output	2	L	CB,VF	A,C (www.iitm.ac.in)
2	29.07.15	Heart rate, Heart sound	1	L	CB,VF	C.B (www.iitm.ac.in)
3	30.07.15	Pulmonary function measurements, Spirometer	1	L	CB	A,C
4	31.07.15 01.08.15	Photo,Body Plethysmography	2	L	CB	C
5	03.08.15 04.08.15	Blood Gas analysers: pH of blood,	2	L	CB	B,C
6	05.08.15	Measurement of blood pCO ₂ , pO ₂	1	L	CB	A,C
7	07.08.15 08.08.15	Finger-tip oxymeter, ESR, GSR measurements	2	L,S	CB	A,C

UNIT –IV MEDICAL IMAGING

Lect. no	Date Planed	Topics to be covered	Time required (periods)	Teaching Methods	Teaching Aids	Books /Journals Referred
1	10.08.15 11.08.15	Radio graphic and Fluoroscopic techniques	2	L	CB	A,C
2	12.08.15	Computer tomography	1	L	CB	D,C
3	13.08.15 14.08.15	MRI, Ultrasonography	2	L	CB	A,C
4	18.08.15 19.08.15	Endoscopy, Thermography	2	L	CB,VF	F,C (www.iitm.ac.in)
5	20.08.15 21.08.15	Different types of biotelemetry systems and Patient monitoring	2	L	CB	F,C
6	22.08.15 24.08.15	Introduction to Biometric systems	2	L	CB,PP	D,C

UNIT –V ASSISTING AND THERAPEUTIC EQUIPMENTS

Lect. No	Date Planed	Topics to be covered	Time required (periods)	Teaching Methods	Teaching Aids	Books /Journals Referred
1	25.08.15 26.08.15	Pacemakers, Defibrillators	2	L	CB,VF	C (www.iitm.ac.in)
2	28.08.15	Ventilators	1	L	CB,PP	C,F
3	29.08.15 31.08.15	Nerve and Muscle stimulators	2	L	CB	A,C
4	02.09.15	Diathermy	1	L	CB	D,A,C
5	03.09.15 04.09.15	Heart, Lung machine	2	L	CB	C
6	09.09.15	Audio meters	1	L	CB	C,D
7	10.09.15 11.09.15	Dialysers ,Lithotripsy	2	L	CB,VF	C (www.iitm.ac.in)

Teaching Aids : Video Film (VF), Power Point Presentation (PP), Demo (D) , Models (M) , Over Head Project (OHP), Chalk Board (CB).

Teaching Methods: Lecturer (L), Group Discussion (GD) , Quiz (Q), Seminar (S), Team Teaching (TT) , Lab Visit (LV) ,Industrial Visit Industrial Visit .

TEXT BOOKS

A. R.S.Khandpur, ‘Hand Book of Bio-Medical instrumentation’, Tata McGraw Hill Publishing Co Ltd., 2003.

B. Leslie Cromwell, Fred J.Weibell, Erich A.Pfeiffer, ‘Bio-Medical Instrumentation and Measurements’, II edition, Pearson Education, 2002 / PHI.

REFERENCES

C. M.Arumugam, ‘Bio-Medical Instrumentation’, Anuradha Agencies, 2003.

D. L.A. Geddes and L.E.Baker, ‘Principles of Applied Bio-Medical Instrumentation’, John Wiley & Sons, 1975.

E. J.Webster, ‘Medical Instrumentation’, John Wiley & Sons, 1995.

F. C.Rajarao and S.K. Guha, ‘Principles of Medical Electronics and Bio-medical Instrumentation’, Universities press (India) Ltd, Orient Longman Ltd, 2000.

STAFF INCHARGE

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