

**ANNAI MATHAMMAL SHEELA ENGINEERING
COLLEGE, NAMAKKAL – 637 013
COURSE DELIVERY PLAN**

Name of the Department: EEE
Sub Code & Name: EE2403& Special Electrical Machines

Name of the Staff: Mr.K.KARTHIKEYAN
Year / Sem: IV/VIII

UNIT-I SYNCHRONOUS RELUCTANCE MOTORS

<i>Lect. No.</i>	<i>Date Planed</i>	<i>Topics to be Covered</i>	<i>Time Required (Period)</i>	<i>Teaching Methods</i>	<i>Teaching Aids</i>	<i>Books/Journals Referred</i>
1	22.06.15	Introduction	1	L	CB	1,2
2	23.06.15	Constructional features	1	L	CB,VF	1,2
3	24.06.15	Types	1	L,TT	CB,	1,2
4	25.06.15	Axial flux motors	1	L	CB	1,2
5	25.06.15	Radial flux motors	1	L,S	CB,VF	www.iitk.ac.in
6	27.06.15	Operating principles	1	L	CB	1,2
7	29.06.15	Variable Reluctance	1	L	CB	1,2
8	01.07.15	Hybrid Motors	1	L	CB,PP	1,2
9	02.07.15	SYNREL Motors	1	L	CB	www.iitk.ac.in
10	02.07.15	Voltage Equations	2	L,GD	CB,PP	1,2
11	04.07.15	Torque Equations	1	L	CB	www.iitk.ac.in
12	06.07.15	Phasor diagram, Characteristics.	1	L	CB	1,2

UNIT-II STEPPING MOTORS

<i>Lect. No.</i>	<i>Date Planed</i>	<i>Topics to be Covered</i>	<i>Time Required (Period)</i>	<i>Teaching Methods</i>	<i>Teaching Aids</i>	<i>Books/Journals Referred</i>
1	08.07.15	Introduction	1	L	CB	1,2
2	09.07.15	Constructional features	1	L	CB	1,2
3	09.07.15	Principle of operation	1	L,TT	CB,VF	www.iitb.ac.in
4	11.07.15	Variable reluctance motor	1	L	CB	1,3
5	13.07.15	Hybrid motor	1	L,S	CB	1,3
6	15.07.15	Single stack configurations	1	L	CB	1,3
7	16.07.15	multi stack configurations	1	L	CB,PP	1,3
8	20.07.15	Torque equations	1	L	CB	1,3
9	22.07.15	Modes of excitations	1	L	CB	www.iitb.ac.in

10	23.07.15	Characteristics	2	L,TT	CB,PP	1,3
11	23.07.15	Drive Circuits, Microprocessor control of stepping motors	1	L	CB	www.iitb.ac.in
12	25.07.15	Closed loop control.	2	L,TT	CB,PP	1,3

UNIT-III SWITCHED RELUCTANCE MOTORS

<i>Lect. No.</i>	<i>Date Planned</i>	<i>Topics to be Covered</i>	<i>Time Required (Period)</i>	<i>Teaching Methods</i>	<i>Teaching Aids</i>	<i>Books/Journals Referred</i>
1	27.07.15	Introduction	1	L	CB	1,4
2	29.07.15	Constructional features	1	L	CB,VF	www.youtube.com
3	30.07.15	Rotary and Linear SRMs	1	L	CB	1,2
4	30.07.15	Principle of operation	1	L	CB	1,4
5	01.08.15	Torque production – Steady state performance prediction	1	L,S	CB	1,2
6	03.08.15	Analytical method	1	L	CB,PP	www.youtube.com
7	05.08.15	Power Converters and their controllers	1	L	CB	1,2
8	06.08.15	Methods of Rotor position sensing	1	L,TT	CB,PP	1,2
9	06.08.15	Sensorless operation	1	L	CB	1,2
10	08.08.15	Closed loop control of SRM	1	L	CB	1,2
11	10.08.15	Characteristics	2	L,GD	CB	www.youtube.com
12	13.08.15	Applications	2	L,GD	CB	www.youtube.com

UNIT-IV PERMANENT MAGNET BRUSHLESS D.C. MOTORS

<i>Lect. No.</i>	<i>Date Planned</i>	<i>Topics to be Covered</i>	<i>Time Required (Period)</i>	<i>Teaching Methods</i>	<i>Teaching Aids</i>	<i>Books/Journals Referred</i>
1	17.08.15	Introduction	1	L	CB	www.iitb.ac.in
2	19.08.15	Permanent Magnet materials	1	L,TT	CB	1,4
3	20.08.15	Magnetic Characteristics	1	L	CB,PP	1,2

4	20.08.15	Permeance coefficient	1	L	CB	1,2
5	22.08.15	Principle of operation	1	L,S	CB	www.iitb.ac.in
6	24.08.15	Types	1	L	CB	1,3
7	26.08.15	Magnetic circuit analysis	1	L	CB	1,3
8	27.08.15	EMF and torque equations	1	L	CB,PP	1,4
9	27.08.15	Commutation	1	L	CB	1,3
10	29.08.15	Power controllers	2	L,GD	CB,VF	www.iitm.ac.in
11	31.08.15	Motor characteristics and control.	1	L	CB	1,2
12	02.09.15	Applications	1	L	CB	1,2

UNIT-V PERMANENT MAGNET SYNCHRONOUS MOTORS

<i>Lect. No.</i>	<i>Date Planed</i>	<i>Topics to be Covered</i>	<i>Time Required (Period)</i>	<i>Teaching Methods</i>	<i>Teaching Aids</i>	<i>Books/Journals Referred</i>
1	03.09.15	Introduction	1	L	CB	www.iitb.ac.in
2	09.09.15	Principle of operation	1	L,TT	CB	1,2
3	10.09.15	Ideal PMSM	1	L	CB	1,2
4	10.09.15	EMF and Torque equations	1	L	CB	1,2
5	12.09.15	Armature reaction MMF	1	L,S	CB,PP	1,2
6	14.09.15	Synchronous Reactance	1	L	CB	1,2
7	16.09.15	Sinewave motor with practical windings	1	L	CB,VF	www.iitm.ac.in
8	19.09.15	Phasor diagram	1	L	CB	1,4
9	21.09.15	Torque/speed characteristics	1	L,GD	CB	1,4
10	23.09.15	Power controllers	1	L	CB,PP	1,4
11	26.09.15	Converter Volt	2	L	CB	www.iitb.ac.in
12	28.09.15	ampere requirements	1	L	CB,PP	1,4

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.

TEXT BOOKS:

1. T.J.E. Miller, 'Brushless Permanent Magnet and Reluctance Motor Drives', Clarendon Press, Oxford, 1989.
2. T. Kenjo, 'Stepping Motors and Their Microprocessor Controls', Clarendon Press London, 1984.

REFERENCES:

3. R.Krishnan, 'Switched Reluctance Motor Drives – Modeling, Simulation, Analysis, Design and Application', CRC Press, New York, 2001.
4. 2. P.P. Aearnley, 'Stepping Motors – A Guide to Motor Theory and Practice', Peter Perengrinus London, 1982.
5. 3. T. Kenjo and S. Nagamori, 'Permanent Magnet and Brushless DC Motors', Clarendon Press, London, 1988.