

## Lesson Plan

### Flexible AC Transmission Systems

Week	Lecture	Topic	Covered on
1 <sup>st</sup>	1	Review of basics of power transmission network control of power flow in AC Transmission line	
	2	Analysis of uncompensated AC transmission line	
	3	Effect of series and shunt compensation at the mid-point of the line on power transfer	
2 <sup>nd</sup>	4	Need for FACTS controller	
	5	Types of FACTS controller	
	6	Series type controller	
3 <sup>rd</sup>	7	Shunt type controller	
	8	Applications	
	9	Configuration of SVC	
4 <sup>th</sup>	10	Voltage regulation by SVC	
	11	Design of SVC to regulate the mid point voltage of a SMIB system	
	12	Transient stability enhancement and power oscillation damping of SMIB system with SVC connected at the mid point of the line	
5 <sup>th</sup>	13	Transient stability enhancement and power oscillation damping of SMIB system with SVC connected at the mid point of the line	
	14	Applications of SVC	
	15	Concepts of controlled series compensation	
6 <sup>th</sup>	16	Analysis of TCSC	
	17	Operation of TCSC	
	18	Analysis of GCSC	
7 <sup>th</sup>	19	Operation of GCSC	
	20	Modelling of TCSC for load flow studies	
	21	Modelling of GCSC for load flow studies	
8 <sup>th</sup>	22	Modelling of TCSC for stability studies	
	23	Modelling of GCSC for stability studies	
	24	Application of TCSC	
9 <sup>th</sup>	25	Application of GCSC	
	26	Static synchronous compensator STATCOM	
	27	Operation of SATCOM	
10 <sup>th</sup>	28	Modelling of STATCOM for power flow studies	
	29	Modelling of STATCOM for transient stability studies	
	30	Static synchronous series compensator (SSSC)	
11 <sup>th</sup>	31	Operation of SSSC	
	32	Modelling of SSSC for power flow studies	
	33	Modelling of SSSC transient stability studies	
12 <sup>th</sup>	34	Operation of unified power flow controller	
	35	Modelling of UPFC for load flow studies	
	36	Operation of interline power flow controller	
13 <sup>th</sup>	37	Modelling of IPFC for load flow studies	
	38	Applications of STATCOM	
	39	Applications of SSSC	
14 <sup>th</sup>	40	Applications of UPFC	
	41	Applications of IPFC	
	42	Difference between series and shunt compensator	
15 <sup>th</sup>	43	Applications of series compensator	
	44	Applications of shunt compensator	
	45	Revision	