Lesson Plan

Name of faculty : Ms. Bhawna

Discipline : Electrical Engineering

Semester : 8th

Subject : Flexible AC transmission system (EE-420-L)

Lesson plan duration: 15 weeks

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| **Theory** |
| **Week** | **Lecture**  | **Topic (Including Assignment / Test) : Planned** | **Actually covered on (date)** |
| 1st | 1 | Introduction to subject |  |
| 2 | Review of basics of power transmission network control of power flow in AC Transmission line |  |
| 3 | Analysis of uncompensated AC transmission line |  |
| 4 | Effect of series and shunt compensation at the mid point of the line on power transfer |  |
| 2nd | 5 | Need for FACTS controller |  |
| 6 | Types of FACTS controller |  |
| 7 | Series type controller |  |
| 8 | Shunt type controller |  |
| 3rd | 9 | Applications |  |
| 10 | Assignment |  |
| 11 | Revision |  |
| 12 | Configuration of SVC |  |
| 4th | 13 | Voltage regulation by SVC |  |
| 14 | Design of SVC to regulate the mid point voltage of a SMIB system |  |
| 15 | Transient stability enhancement and power oscillation damping of SMIB system with SVC connected at the mid point of the line |  |
| 16 | Transient stability enhancement and power oscillation damping of SMIB system with SVC connected at the mid point of the line |  |
| 5th | 17 | Applications of SVC |  |
| 18 | Revision |  |
| 19 | Concepts of controlled series compensation |  |
| 20 | Analysis of TCSC |  |
| 6th | 21 | Operation of TCSC |  |
| 22 | Analysis of GCSC |  |
| 23 | Operation of GCSC |  |
| 24 | Modelling of TCSC for load flow studies |  |
| **7th** |  | **1stSessionals** |  |
| 8th | 25 | Modelling of GCSC for load flow studies |  |
| 26 | Modelling of TCSC for stability studies |  |
| 27 | Modelling of GCSC for stability studies |  |
| 28 | Application of TCSC |  |
| 9th | 29 | Application of GCSC |  |
| 30 | Assignment |  |
| 31 | Revision |  |
| 32 | Revision |  |
| 10th | 33 | Static synchronous compensator STATCOM |  |
| 34 | Operation of SATCOM |  |
| 35 | Modelling of STATCOM for power flow studies |  |
| 36 | Modelling of STATCOM for transient stability studies |  |
| 11th | 37 | Static synchronous series compensator (SSSC) |  |
| 38 | Operation of SSSC |  |
| 39 | Modelling of SSSC for power flow studies |  |
| 40 | Modelling of SSSC transient stability studies |  |
| 12th | 41 | Operation of unified power flow controller |  |
| 42 | Modelling of UPFC for load flow studies |  |
| 43 | Operation of interline power flow controller |  |
| 44 | Modelling of IPFC for load flow studies |  |
| 13th | 45 | Applications of STATCOM |  |
| 46 | Applications of SSSC |  |
| 47 | Applications of UPFC |  |
| 48 | Applications of IPFC |  |
| **14th** |  | **2ndSessionals** |  |
| 15th | 49 | Difference between series and shunt compensator |  |
|  | 50 | Applications of series compensator |  |
|  | 51 | Applications of shunt compensator |  |
|  | 52 | Revision |  |