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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------|------------|------------|----------------------------------------------------------------|------------|------------|------------|------------|-------------|-------------|-------------|
| <b>COURSE CODE:</b><br>1152EE109                                                                                                                                                | <b>COURSE TITLE: LOAD FORECASTING<br/>AND GENERATION FORECASTING</b>                         | L          | T          | P          | C                                                              |            |            |            |            |             |             |             |
|                                                                                                                                                                                 |                                                                                              | 3          | 0          | 0          | 3                                                              |            |            |            |            |             |             |             |
| <b>COURSE CATEGORY:</b>                                                                                                                                                         |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| Program Elective                                                                                                                                                                |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <b>PREAMBLE :</b>                                                                                                                                                               |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| To understand the different concepts of load forecasting and generation forecasting                                                                                             |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <b>PREREQUISITE COURSES:</b>                                                                                                                                                    |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <ul style="list-style-type: none"> <li>Power System operation and control</li> </ul>                                                                                            |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <b>COURSE EDUCATIONAL OBJECTIVES :</b>                                                                                                                                          |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| The objectives of the course are to make the students,                                                                                                                          |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <ul style="list-style-type: none"> <li>To understand basic concepts of load forecasting and load management</li> <li>To Understand the energy demand and forecasting</li> </ul> |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <b>COURSE OUTCOMES :</b>                                                                                                                                                        |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| Upon the successful completion of the course, students will be able to:                                                                                                         |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <b>CO Nos.</b>                                                                                                                                                                  | <b>Course Outcomes</b>                                                                       |            |            |            | <b>Knowledge Level<br/>(Based on revised Bloom's Taxonomy)</b> |            |            |            |            |             |             |             |
| C01                                                                                                                                                                             | Understand about load forecasting methods                                                    |            |            |            | K2                                                             |            |            |            |            |             |             |             |
| C02                                                                                                                                                                             | Explain the Basics about energy management                                                   |            |            |            | K2                                                             |            |            |            |            |             |             |             |
| C03                                                                                                                                                                             | Understand about energy demand and forecasting                                               |            |            |            | K2                                                             |            |            |            |            |             |             |             |
| C04                                                                                                                                                                             | Describe about Recent trends in energy forecasting and case studies about energy forecasting |            |            |            | K2                                                             |            |            |            |            |             |             |             |
| C05                                                                                                                                                                             | Plan generating station depending upon forecasting                                           |            |            |            | K2                                                             |            |            |            |            |             |             |             |
| <b>CORRELATION OF COs AND POs</b>                                                                                                                                               |                                                                                              |            |            |            |                                                                |            |            |            |            |             |             |             |
| <b>Cos</b>                                                                                                                                                                      | <b>PO1</b>                                                                                   | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b>                                                     | <b>PO6</b> | <b>PO7</b> | <b>PO8</b> | <b>PO9</b> | <b>PO10</b> | <b>PO11</b> | <b>PO12</b> |
| CO1                                                                                                                                                                             | H                                                                                            |            |            |            | L                                                              | L          |            |            |            | L           | M           |             |
| CO2                                                                                                                                                                             | L                                                                                            |            |            |            |                                                                | L          | H          |            |            | L           | M           |             |
| CO3                                                                                                                                                                             | M                                                                                            |            |            |            |                                                                |            |            |            |            | L           |             |             |
| CO4                                                                                                                                                                             | M                                                                                            |            | M          |            | H                                                              |            | L          |            |            |             | L           |             |
| CO5                                                                                                                                                                             | H                                                                                            |            | M          |            | H                                                              | M          |            |            |            |             | L           |             |

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| <b>COURSE CONTENT:</b>                                                                                                                                                                                                                                                                                                            |                         |          |
| <b>UNIT I</b>                                                                                                                                                                                                                                                                                                                     | <b>LOAD FORECASTING</b> | <b>9</b> |
| Classification and characterization of loads, Approaches to load forecasting, Forecasting methodology, Energy forecasting, Peak demand forecasting, Nonweather sensitive forecast and Weather sensitive forecast, Total forecast, Annual and monthly peak demand forecasts, Applications of state estimation to load forecasting. |                         |          |
| <b>UNIT II</b>                                                                                                                                                                                                                                                                                                                    | <b>LOAD MANAGEMENT</b>  | <b>9</b> |
| Introduction to Load management, Electric energy production and delivery system structure                                                                                                                                                                                                                                         |                         |          |

(EEPDS), Design alternatives for EEPD systems, Communication/control techniques for load management, Tariff structure and load management, principles of macro and microeconomics and energy pricing strategies, Assessing the impacts of load management.

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| <b>UNIT III</b> | <b>ENERGY DEMAND FORECASTING</b> | <b>9</b> |
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Static and dynamic analysis of energy demand, Elements of energy demand forecasting, Methodologies and models for energy demand forecasting, Techno economic approach in energy demand forecasting. Energy auditing, Energy management Power Pools and Energy Banking

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| <b>UNIT IV</b> | <b>TRENDS AND CASE STUDIES</b> | <b>9</b> |
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Energy management strategy, Symbiotic relation between information, Energy models and decision making, Case studies like industrial energy forecasting, Transportation energy forecasting, Residential, Commercial and agricultural energy forecasting

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| <b>UNIT V</b> | <b>FORECASTING AND PLANNING</b> | <b>9</b> |
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The role of forecasting in planning – comparison and selection of forecasting methods. The accuracy of forecasting methods – Pattern of the Data and its effects on individual forecasting methods. Time horizon effects on forecasting methods. Generation planning-fundamental economic analysis-Generation planning optimized according to generating unit categories distribution & transmission system planning

**TOTAL: 45 PERIODS**

**TEXT BOOKS:**

1. Power System Network Reduction Techniques – Dr.C.Radha Krishnan.
2. Power quality- C.sankaran.
3. Power system stability- Kundur.

**REFERENCE BOOKS:**

1. Power system engineering – Rajput.
2. Understanding the principles of power system harmonics- Arillaga, CRC publications