



CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (Autonomous)
Department of Electrical and Electronics Engineering
Course outcomes statements ME(EEE) R20

| | | Course | | |
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| SNo | Code | Name | Course outcomes statements | |
| 1 | 20EEEC101 | Real Time Applications for Power Systems | 1. Understand the study of optimal power flows | |
| | | | 2. Acquire knowledge of state estimation required for the real-time operation of power system | |
| | | | 3. Describe the importance of contingency analysis at planning stage for secured operation of power system and simulating the contingency studies with different methods. | |
| | | | 4. Discuss the power system security and challenges in secured operation of power system in real-time environment. | |
| | | | 5. Explain various methods and models available in power system load forecasting | |
| 2 | 20EEEC102 | Power Electronic Converters | 1. Give a systematic approach for transient and steady state analysis of all power electronic converters with passive and active loads. | |
| | | | 2. Know and carry out transient and steady state analysis of different power converters of different types of loads and switching sequences. | |
| | | | 3. Analyze power electronic devices | |
| | | | 4. Analyze and design DC-DC and DC-AC converters. | |
| | | | 5. Analyze and design AC regulator and Cyclo converter | |
| 3 | 20EEEE108 | Artificial Intelligence Techniques for Power Systems | 1. Understand the various Artificial Intelligent and Meta-heuristic Techniques | |
| | | | 2. Classify the techniques according to their method of approach | |
| | | | 3. Select the suitable technique for the given power system problem | |
| | | | 4. Implement suitable Intelligent technique for the given power system problem | |
| | | | 5. Execute any power system planning and operation using Artificial Intelligent Techniques | |
| 4 | 20EEEE110 | Power Quality | 1. Acquire the knowledge of theoretical concepts and standards of Power Quality issues and its measurement | |
| | | | 2. Acquire knowledge in identifying sources of harmonics | |
| | | | 3. Acquire the knowledge to analyze voltage sag in distribution systems | |
| | | | 4. Acquire the knowledge Harmonic Filtering Techniques | |
| | | | 5. Acquire the knowledge in Solutions to power factor correction, Wiring and Grounding Problems | |
| 5 | 20EEEC103 | Power Systems Lab | 1. Learn the measurement of sequence reactance of synchronous machine and 3-phase transformer | |
| | | | 2. Knowledge about the relay characteristics | |
| | | | 3. Acquire Knowledge to estimate efficiency, regulation and ABCD constants of 3-phase transmission line | |



Dr. M. Dalasubbarreddy
 HOD/EEE, CBIT
 Dept. of EEE, CBIT (A)
 Gandipet, Hyderabad - 75

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| | | | 4. Learn about various types of faults |
| | | | 5. Validate the I-V and P-V characteristics of a PV module |
| 6 | 20EEEC104 | Power Electronics Simulation Lab | Acquire the knowledge of using simulation tools for power electronic converters modelling. |
| | | | 2. Analyze the performance of phase -controlled converters by simulation |
| | | | 3. Demonstrate the effects of different topologies and voltage control techniques in inverters. |
| | | | 4. Simulate different dc-dc converter circuits |
| | | | 5. Investigate with ac-ac conversion and reactive power compensation calculations. |
| 7 | 20EEEC105 | Power System Dynamics | 1. Distinguish various stabilities issues in the power system |
| | | | 2. Understand the modeling of synchronous machine |
| | | | 3. Describe the role of Excitation, PSS and Prime Movers in improving the power system performance during disturbances |
| | | | 4. Analyze the small-signal stability of the power system |
| | | | 5. Infer the concepts of LFOs and SSR in detail |
| 8 | 20EEEC106 | Advanced Power Electronic Circuits | 1. Demonstrate the knowledge of DC isolated and non-isolated regulators |
| | | | 2. Demonstrate the knowledge of load and switch resonant converters |
| | | | 3. Demonstrate the knowledge resonant inverters |
| | | | 4. Model and design DC-DC converters for renewable energy conversion. |
| | | | 5. Apply the knowledge of dc-dc converters used in dc drives and renewable energy applications |
| 9 | 20EEEE107 | Renewable Energy System | 1. Demonstrate the effects of different loads on the performance of various phase-controlled converters and choppers. |
| | | | 2. Understand the various topologies and control techniques used in inverters. |
| | | | 3. Acquire the conversion principles of AC-AC converters |
| | | | 4. Analyze different power electronic based speed control techniques of electric drives |
| | | | 5. Utilize matrix converter for different power conversions and analyze resonant converters. |
| 10 | 20EEEE113 | Energy Auditing & Management | 1. Acquire the background required for engineers to meet the role of energy managers |
| | | | 2. Gain the skills and techniques required to implement energy management |
| | | | 3. Demonstrate energy conservation aspects |
| | | | 4. Apply the energy conservation techniques to industrial loads |
| | | | 5. Perform basic energy audit in an organization |


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| 11 | 20EEEC107 | Power Electronics Lab | 1. Demonstrate the effects of different loads on the performance of various phase-controlled converters and choppers. |
| | | | 2. Understand the various topologies and control techniques used in inverters. |
| | | | 3. Acquire the conversion principles of AC-AC converters |
| | | | 4. Analyze different power electronic based speed control techniques of electric drives |
| | | | 5. Utilize matrix converter for different power conversions and analyze resonant converters. |
| 12 | 20EEEC108 | Power Systems Simulation Lab | 1. Validate the adaptability of economic load dispatch and load flow for a given situation by simulation results. |
| | | | 2. Acquire the knowledge about formation of Impedance and Admittance Matrices |
| | | | 3. Acquire the knowledge to analyze the Symmetrical and un-symmetrical fault currents |
| | | | 4. Acquire the knowledge to simulate various types of transmission models |
| | | | 5. Acquire the knowledge about Symmetrical and Unsymmetrical components for a given system. |
| 13 | 20EEEC109 | Mini Project with Seminar | 1. Organise the literature review to identify and formulate the engineering problem |
| | | | 2. Design engineering solutions to simple problems utilizing modern tools and methods |
| | | | 3. Demonstrate a sound technical knowledge of their selected mini project topic |
| | | | 4. Communicate with engineers and the community to have the conscious of surroundings |
| | | | 5. Adapt the skills and attitudes of a Professional Engineer. |
| 14 | 20EEEE116 | Electric and Hybrid Vehicles | 1. Understand the models of describing Electric and hybrid vehicles and their performance. |
| | | | 2. Determine the tractive effort required for EHV and EV with different vehicle parameters and optimization of power train. |
| | | | 3. Design optimization of Electric power train and implementation of charging technology. |
| | | | 4. Analyze the different possible ways of energy storage and battery selection. |
| | | | 5. Illustrate the principle of Hybrid Electric Vehicle, Battery Electric Vehicle and Plug- In EHV and able prepare business plans. |
| 15 | 20EEEC110 | Industrial Project/Dissertation Phase 1 | 1. State research questions related to main problem and identify the Research methods |
| | | | 2. Identify literature for review. |
| | | | 3. Integrate theory and practice. |


HEAD Dr. M. Balasubbarreddy
 Dept. of EEE, IGBT/AE, CBIT
 Gandipet, Hyderabad - 75

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| | | | 4. Apply knowledge and understanding in relation to the agreed area of study. |
| | | | 5. Communicate in written form by integrating, analysing and applying key texts and practices |
| 16 | 20EEEC111 | Industrial Project /Dissertation Phase II | 1. Contribute to Research and Development work. |
| | | | 2. Apply a holistic view to critically, independently and creatively to identify, formulate and deal with complex issues. |
| | | | 3. Evaluate critically different engineering/Technological solutions. |
| | | | 4. Integrate knowledge critically and systematically |
| | | | 5. Develop the ethical aspects of Research work. |
| 17 | 20MEC103 | Research Methodology and IPR | 1. Define research problem, review and assess the quality of literature from various sources |
| | | | 2. Improve the style and format of writing a report for technical paper/Journal report, understand and develop various research designs |
| | | | 3. Collect the data by various methods: observation, interview, questionnaires |
| | | | 4. Analyze problem by statistical techniques: ANOVA, F-test, Chi-square |
| | | | 5. Understand apply for patent and copyrights |
| 18 | 20CEA101 | Disaster Mitigation and Management | 1. Ability to analyse and critically examine existing programs in disaster management regarding vulnerability, risk and capacity at different levels |
| | | | 2. Ability to understand and choose the appropriate activities and tools and set up priorities to build a coherent and adapted disaster management plan |
| | | | 3. Ability to understand various mechanisms and consequences of human induced disasters for the participatory role of engineers in disaster management |
| | | | 4. To understand the impact on various elements affected by the disaster and to suggest and apply appropriate measures for the same |
| | | | 5. Develop an awareness of the chronological phases of disaster preparedness, response and relief operations for formulating effective disaster management plans and ability to understand various participatory approaches/strategies and their application in disaster management |
| 19 | 20MEO102 | Introduction to Optimization Techniques | 1. Formulate a linear programming problems(LPP) |
| | | | 2. Build and solve Transportation Models and Assignment Models. |
| | | | 3. Apply project management techniques like CPM and PERT to plan and execute project successfully |
| | | | 4. Apply queuing and inventory concepts in industrial applications |

HEAD
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 Dr. M. Balasubbarreddy
 HOD/EEE, CBIT

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| | | | 5. Apply sequencing models in industries |
| 20 | 20EGA 101 | English for Research Paper Writing | 1. Illustrate the nuances of research paper writing and draw conclusions about the benefits and limitations of research. |
| | | | 2. Classify different types of research papers and organize the format and citation of sources. |
| | | | 3. Review the literature and categorize between different types of research. |
| | | | 4. Draft paragraphs and write thesis statement in a scientific manner. |
| | | | 5. Develop an original research paper while acquiring the knowledge of how and where to publish their papers. |


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