



DADI INSTITUTE OF ENGINEERING & TECHNOLOGY

An Autonomous Institute

Approved by AICTE & Permanently affiliated to JNTU GV

Accredited by NAAC with 'A' Grade and Inclusion u/s 2(f) & 12(B) of UGC Act

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Institute.

NH-16, Anakapalle - 531002, Visakhapatnam, A.P.

Website: www.diet.edu.in, 9963993229 E-mail: principal@diet.edu.in

ODD SEM

I-I DR-23

ELECTRICAL MACHINE MODELING AND ANALYSIS

- Analyze the characteristics of different types of DC motors to design suitable controllers for different applications.
- Apply the knowledge of reference frame theory for AC machines to model the induction and Synchronous machines.
- Evaluate the steady state and transient behavior of induction and synchronous machines to propose the suitability of drives for different industrial applications
- Analyze the behavior of induction machines using voltage and torque equations.

ANALYSIS OF POWER ELECTRONIC CONVERTERS

- Describe and analyze the operation of AC-DC converters.
- Analyze the operation of power factor correction converters.
- Analyze the operation of three phase inverters with PWM control.
- Study the principles of operation of multi-level inverters and their applications

POWER QUALITY AND CUSTOM POWER DEVICES

- Identify the issues related to power quality in power systems.
- Address the problems of transient and long duration voltage variations in power systems. ·
Analyze the effects of harmonics and study different mitigation techniques.
- Identify the importance of custom power devices and their applications.
- Acquire knowledge on different compensation techniques to minimize power quality disturbances.

HVDC TRANSMISSION AND FLEXIBLE AC TRANSMISSION SYSTEMS



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- At the end of the course, student will be able to
- Compare HVDC and EHVAC transmission systems
- Analyze converter configurations used in HVDC and evaluate the performance metrics.
- Understand controllers for controlling the power flow through a dc link and compute filter Parameters.
- Apply impedance, phase angle and voltage control for real and reactive power flow in ac transmission systems with FACTS controller.
- Analyze and select a suitable FACTS controller for a given power flow condition.

POWER ELECTRONICS SIMULATION LABORATORY

- To understand the operation of DC-DC converters, AC-DC converters, AC voltage regulators and DC-AC converters by simulation.

POWER CONVERTERS LABORATORY

- Students are able to implement the converter and inverters in real time applications.

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SWITCHED MODE POWER CONVERSION

- Analyze operation and control of non-isolated and isolated switch mode converters.
- Design of non-isolated and isolated switch mode converters.
- Analyze operation and control of resonant converters.
- Feedback design of switch mode converters based on linearized models.

POWER ELECTRONIC CONTROL OF ELECTRICAL DRIVES

- Understand the concepts of scalar and vector control methods for drive systems.
- Analyze and design controllers and converters for induction motor, PMSM and BLDC drives.



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- Select and implement proper control techniques for induction motor and PMSM for specific applications.
- Analyze and design control techniques and converters for SRM drives.

HYBRID ELECTRIC VEHICLES

- Know the concept of electric vehicles and hybrid electric vehicles.
- Familiar with different motors used for hybrid electric vehicles.
- Understand the power converters used in hybrid electric vehicles
- Know different batteries and other energy storage systems.

APPLICATIONS OF POWER CONVERTERS

- Analyze power electronic application requirements.
- Identify suitable power converter from the available configurations.
- Develop improved power converters for any stringent application requirements.
- Improve the existing control techniques to suit the application.
- Design of Bi-directional converters for charge/discharge applications

ELECTRIC DRIVES SIMULATION LABORATORY

- At the end of the course, student will be able to analyze the performance of different electrical machines and drives

ELECTRIC DRIVES LABORATORY

- The student should understand the performance of DC & AC drives.

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SMART GRID TECHNOLOGIES



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- Understand smart grids and analyze the smart grid policies and developments in smart grids.
- Develop concepts of smart grid technologies in hybrid electrical vehicles etc.
- Understand smart substations, feeder automation, GIS etc.
- Analyze micro grids and distributed generation systems.
- Analyze the effect of power quality in smart grid and to understand latest developments in ICT for smart grid.

INDUSTRIAL SAFETY

- Understand the general industrial requirements like lighting, cleanliness prevention from hazards and accidents.
- Analyze maintenance requirements of the industry and cost associated.
- Analyze wear and corrosion aspects of the industry and their prevention.
- Identify the faults prone areas and their repair and periodic maintenance.



Dr. R Vaikunta Rao
Principal

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