Research Internship- 2025

Title of Research Internship Module	
IoT Based Smart grid, Hybrid Renewable Energy Systems (HRES), Energy Storage Systems, Intelligent Solution Techniques	
Module Coordinators **Dr. Manjaree Pandit** Dean (faculty of Engineering & Technology) MITS- Deemed University Gwalior https://web.mitsgwalior.in/faculty-profiles-ece-2/dr-manjaree-pandit	
Prof. Poonam Singh Assistant Professor Centre for IoT, MITS- Deemed University Gwalior 8319070763 https://web.mitsgwalior.in/faculty-profiles-ece/prof-poonam-singh	
Objective	1. To design and analyze the performance of IoT based smart grid using intelligent technique 2. Assessment of grid integrated photovoltaic powered Electric Vehicle Charging Station (EVCS) for sustainable future 3. To design and analyze the performance of HRES taking a case study of MITS-DU
Expected outcome	(1) Students will be able to identify suitable renewable energy technologies such as solar PV and hybrid systems to be on/off grid for selected locations. (2) Students will be able to use tools such as MATLAB/Simulink and HOMER Pro to model and simulate energy systems under realistic scenarios. (3) Students will develop simple codes in MATLAB or Python for intelligent optimization of hybrid renewable systems with single/multiple objectives.
Name of research grant/ existing Lab or lab being developed in the department	Department of Science and Technology, New Delhi India, vide DST-FIST (Level-0) File no. SR/FST/College-284/2018

Research Internship- 2025

Title of Research Internship Module	
Heat and Mass Transfer Analysis for high moisture crop, carry out energy and exergy analysis of Solar Drier	
Module Coordinator Dr. M.K Gaur Professor, Mechanical Engineering MITS- Deemed University Gwalior https://web.mitsgwalior.in/faculty-profiles-me-2/dr-manoj-kumar-gaur / 9425020318	
Objective	Heat and Mass Transfer Analysis for high moisture crop, carry out energy and exergy analysis of Solar Drier
Expected outcome	Energy Efficicney, Crop Quality & Preservation
Name of research grant/ existing Lab or lab being developed in the department	MPCST

Title of Research Internship Module	
IoT-Based Real-Time Monitoring System of MITS Solar Plant	
Module Coordinator Dr. Praveen Bansal Professor, Centre for IoT MITS- Deemed University Gwalior https://web.mitsgwalior.in/faculty-profiles-iot-2/praveen-bansal/ 9827577549	
Objective	This project aims to develop a real-time solar power monitoring system using ESP32 to collect voltage and current data from a solar panel. The data is wirelessly transmitted to a Raspberry Pi server, where it is visualized and logged using a Node-RED dashboard. The system enables performance evaluation and efficiency analysis of the solar panel over time.
Expected outcome	The system ensures accurate real-time monitoring of solar panel parameters, providing users with a clear understanding of power generation. It features an easy-to-use local web dashboard for intuitive data visualization, supported by reliable wireless data transmission. Continuous monitoring enables early

	detection of performance issues, leading to improved maintenance and overall efficiency of the solar energy system.

Title of Research Internship Module To design IoT based Weather monitoring system & improving energy efficiency of PV plants using Machine Learning	
Module Coordinator Dr. Saurabh Kumar Rajput Assistant Professor, Centre for IoT MITS- Deemed University Gwalior https://web.mitsgwalior.in/faculty-profiles-iot-2/saurabh-kumar-rajput / 9555969573	
Objective	To develop an IoT-based system for solar PV plants, optimizing energy efficiency through real-time data analysis, proactive temperature regulation, predictive maintenance, and remote monitoring for enhanced performance and sustainability
Expected outcome	1. To know the IoT technology, sensor integration, and data analysis techniques in the context of Rooftop PV systems 2. To know the Practical designing, testing hardware and software components for real-world applications 3. To develop problem-solving skills through addressing challenges related to temperature regulation, energy optimization, and system reliability 4. To develop the skills in project management, teamwork, and communication through collaborative research efforts and project presentations 5. To develop the research paper writing & presentation skills
Name of research grant/ existing Lab or lab being developed in the department	Department of Science and Technology, New Delhi India, vide DST-FIST (Level-0) File no. SR/FST/College-284/2018 IoT Lab, C-IoT

Research Internship- 2025

Title of Research Internship Module Image classifications using Deep Learning	
Module Coordinator Dr Dhananjay Bisen (9993331506) Assistant Professor, Centre for IoT MITS- Deemed University Gwalior	
Objective	The objectives of this research internship include: 1. Design deep learning models for image classification using CNNs, transfer learning, and optimization techniques. 2. Gain practical research experience through experiments, performance analysis, and research writing. 3. Promote collaboration with mentors and peers for knowledge sharing and collective learning.
Expected outcome	After completion of the research internship, students will be able to: 1. Explore and analyze image datasets for deep learning applications. 2. Illustrate and differentiate various deep learning models used in image classification. 3. Implement Convolutional Neural Networks (CNNs) for effective image classification tasks. 4. Apply pre-trained models and transfer learning techniques to improve model performance on image data. 5. Gain practical research experience by preparing and writing research articles based on experimental findings.

Title of Research Internship Module: Information security	
Module Coordinator Dr Ashish Tomar (8839837532) Computer Science and Engineering Deptt. MITS- Deemed University Gwalior	
Objective	Designing blockchain based security schemes

Title of Research Internship Module Prediction and Detection using Machine Learning Techniques	
Module Coordinator Dr. Aditya Dubey (6263065605) Assistant Professor, Centre for IoT MITS- Deemed University Gwalior	
Objective	1. Design machine learning models for using prediction using CNNs, transfer learning, and optimization techniques. 2. Gain practical research experience through experiments, performance analysis, and research writing. 3. Promote collaboration with mentors and peers for knowledge sharing and collective learning.
Expected outcome	After completion of the research internship, students will be able to: 1. explore and analyze datasets for machine learning applications. 2. illustrate and differentiate various machine learning models used in prediction and detection. 3. apply pre-trained models and transfer learning techniques to improve model performance on datasets. 4. gain practical research experience by preparing and writing research articles based on experimental findings.
Title of Research Internship Module Image Processing	
Module Coordinator Dr. Shubhi kansal (7827822996) Assistant Professor, Electronics Engg MITS- Deemed University Gwalior	
Objective	To develop various models and algorithms for image quality assessment
Expected outcome	Publication and model development

Research Internship- 2025

Title of Research Internship Module Edge Intelligence for IoT Using Lightweight Machine Learning Models	
Module Coordinator Dr. Abhishek Narwaria (9713697535) Assistant Professor, Centre for IoT MITS- Deemed University Gwalior	
Objective	To design and deploy lightweight machine learning models capable of real-time decision-making on resource-constrained IoT edge devices. The internship will focus on comparing edge-based and cloud-based processing across generic IoT applications regarding latency, energy efficiency, and communication overhead.
Expected outcome	1. A functional prototype demonstrating edge-based ML inference on IoT devices. 2. Comparative analysis report of edge vs. cloud inference in terms of latency, energy, and communication. 3. Experience with real-time deployment of TinyML/TensorFlow Lite models. 4. A publishable paper highlighting the findings and architecture.
Title of Research Internship Module Design and development of real time data processing algorithm	
Module Coordinator Dr. Devesh Kumar Lal (9407100266) Assistant Professor, CSE Deptt. MITS- Deemed University Gwalior	
Objective	Design and development of real time data processing algorithm
Expected outcome	Design and develop efficient real-time data processing algorithms capable of handling large-scale or continuous data streams with minimal latency and high accuracy

Research Internship- 2025

Title of Research Internship Module Deep transfer Learning and Medical Imaging	
Module Coordinator Dr. Kirti Raj Bhatele (8823872288) Assistant Professor, CSE Deptt. MITS- Deemed University Gwalior	
Objective	To develop and evaluate a robust approach based on deep transfer learning for the detection and classification of brain anomalies using MRI images, aiming to enhance diagnostic accuracy and computational efficiency. The project will involve leveraging pre-trained convolutional neural network (CNN) architectures, fine-tuning them on annotated medical imaging datasets, and optimizing performance through techniques such as data augmentation, feature extraction, and model interpretability, with the goal of contributing toward real-world clinical decision support systems.
Expected outcome	A research article illustrating the performance of the proposed approach
Title of Research Internship Module Explanable Artificial Intelligence, Machine Learning, Deep Learning	
Module Coordinator Dr. Rohit Agrawal (8505821983) Assistant Professor, CSE Deptt. MITS- Deemed University Gwalior	
Objective	To contribute to medical research by applying Explainable Artificial Intelligence (XAI) techniques for improving the interpretability and trustworthiness of machine learning models in clinical decision-making, diagnosis, and treatment planning.
Expected outcome	A comparative analysis of different XAI methods on selected medical tasks. A reproducible pipeline combining predictive modeling and explanation. A report/paper summarizing insights, potential limitations, and future directions.

Research Internship- 2025

Title of Research Internship Module AI/ML in Healthcare	
Module Coordinator Dr. Saurabh Agarwal (8109964724) Assistant Professor, CSE Deptt. MITS- Deemed University Gwalior	
Objective	Development of Deep Learning Models for detection Pulmonary Diseases
Expected outcome	Trained a deep neural network that can detect diseases with a low false positive rate.
Title of Research Internship Module Computer Vision	
Module Coordinator Dr. Manojeet Roy (9993649781) Assistant Professor, CSE Deptt. MITS- Deemed University Gwalior	
Objective	To develop scientific communication and research skills
Expected outcome	The intern will be able to prepare and present technical reports, research papers, or posters summarizing the methodology, experimentation, and findings of the image-based predictive modeling project. The intern will be able to effectively communicate complex technical concepts through written documents and oral presentations tailored to academic or industry audiences. The intern may contribute to a conference submission or journal article as a co-author, demonstrating familiarity with research writing conventions and peer-reviewed publication processes.

Research Internship- 2025

Title of Research Internship Module	
Design and Simulation of Multilevel Inverter using MATLAB/Simulink	
Module Coordinator Dr AFTAB AHMED ANSARI (8878425322) Assistant Professor, Centre for IoT MITS- Deemed University Gwalior	
Objective	The objective of this research internship is to design and simulate a multilevel inverter using MATLAB/Simulink, targeting applications in wind energy systems or other renewable energy setups. Students will explore various inverter topologies, modulation techniques, and control strategies to optimize performance for grid or standalone applications. Upon successful simulation and validation, the project may be extended to real-time simulation using OPAL-RT, in collaboration with the Electrical Engineering Department at MANIT Bhopal for potential hardware implementation.
Expected outcome	"• A complete and validated MATLAB/Simulink model of a multilevel inverter for renewable energy applications. • Performance analysis including waveform quality, switching losses, and THD (Total Harmonic Distortion). • Preparation and submission of a conference paper based on research outcomes. • Scope for real-time simulation using OPAL-RT (if feasible). • Potential collaboration with MANIT Bhopal for real-time testing or hardware prototyping."5. Gain practical research experience by preparing and writing research articles based on experimental findings.

Research Internship- 2025

Title of Research Internship Module AI/ML-Powered System to Promote Energy-Efficient Consumer Behavior Using Smart Metering	
Module Coordinator Dr. Soumyajit Ghosh (7980640226) Assistant Professor, Centre for IoT MITS- Deemed University Gwalior	
Objective	To examine how smart meters contribute to real-time energy monitoring, load disaggregation, and load forecasting. To develop or evaluate algorithms for non-intrusive load monitoring (NILM) using smart meter data.
Expected outcome	Analytical insight into how smart meters enable real-time monitoring and data-driven energy management. Tehniques for load disaggregation and forecasting using smart meter data. A small-scale simulation demonstrating energy data analysis or appliance-level consumption breakdown. A technical report or research paper summarizing findings, methodologies, and potential applications in demand-side management.
Title of Research Internship Module Study of Surface Plasmon Resonance Phenomenon for Optical Sensor Applications	
Module Coordinator Dr. Rupam Srivastava (7800925882) Assistant Professor, Centre for IoT MITS- Deemed University Gwalior	
Objective	To analyze the behavior of Surface Plasmon Resonance (SPR) based optical sensors using computational tool
Expected outcome	• Understanding the physical principles behind surface plasmon resonance and its role in optical sensing. • Exploration of basic SPR sensor configurations using optical simulation tool (COMSOL Multiphysics).

	• Development of simple simulation models demonstrating plasmonic behavior at metal-dielectric interfaces. • Analysis of key parameters such as resonance angle, refractive index sensitivity, and material choice.

Title of Research Internship Module Optical Communication & Networking	
Module Coordinator Dr. Deepak Batham (9755395903) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	To design the energy efficient RSA schemes/algorithms for elastic optical networks (EONs) and evaluate their performance of various network performance metrics.
Expected outcome	1. To reduce energy consumption in EON. 2. To minimize spectrum resources 3. To publish any conference or journal paper
Title of Research Internship Module RF energy harvesting	
Module Coordinator Dr. Vandana Vikas Thakare (9469874761) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	To design the energy efficient RSA schemes/algorithms for elastic optical networks (EONs) and evaluate their performance of various network performance metrics.
Expected outcome	Development of Antennas for RF Energy Harvesting

Research Internship- 2025

Title of Research Internship Module Semiconductor Device Modeling and Simulation	
Module Coordinator Dr. Varun Mishra (8979891801) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	Design and Optimization of Gate All Around Tunnel FET for Lung Cancer Detection
Expected outcome	Optimized Gate All Around Tunnel FET that can detect lung cancer bioanalytes
Title of Research Internship Module Design and analysis of RFID microstrip patch antenna	
Module Coordinator Pooja Sahoo (9907988192) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	Design and analysis of RFID microstrip patch antenna
Expected outcome	To design an compact Size Antenna for RFID application
Title of Research Internship Module AI-powered Signal Processing for Health Monitoring	
Module Coordinator Dr. Himanshu Singh (9424072768) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	1) Edge AI-based Health Monitoring Devices using Wearables, Arduino, IoT, and Machine Learning 2) Transfer Learning for Low-Cost Edge AI Healthcare Applications.
Expected outcome	Prototype of wearable device, health data collection, trained ML models, working demo using Arduino and edge deployment Edge-based model deployment using transfer learning, accuracy optimization, comparative study on resource-constrained devices

Research Internship- 2025

Title of Research Internship Module To develop an algorithm for energy optimization in WSN	
Module Coordinator Dr. Karuna Markam (9425300709) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	To develop an algorithm for energy optimization in WSN
Expected outcome	To minimize power consumption
Title of Research Internship Module To develop a Network Lifetime Maximization Technique for Green Wireless Sensor Networks	
Module Coordinator Dr. Laxmi Shrivastava (9425112732) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	To develop a Network Lifetime Maximization Technique for Green Wireless Sensor Networks
Expected outcome	To enhance the network lifetime of GWSNs
Title of Research Internship Module Plasmonic Sensor	
Module Coordinator BALJINDER KAUR (8360592291) Assistant Professor, Applied Science MITS- Deemed University Gwalior	
Objective	publication
Expected outcome	Journal publication

Research Internship- 2025

Title of Research Internship Module: VLSI-device simulation	
Module Coordinator Dr. Shailendra Singh (9855366768) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	To learn about recent trends in low power VLSI devices
Expected outcome	Research Article

Title of Research Internship Module: Epileptic seizure detection	
Module Coordinator Dr. Hemant Choubey (8770089263) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	Developing and Implementing Automated Seizure Detection Systems
Expected outcome	implement algorithms in implantable devices for real-time analysis of intracranial EEG (iEEG) signals
Title of Research Internship Module 6G Communication and web development	
Module Coordinator Dr. Mukesh Kumar Mishra (8889921142) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	1) Energy efficient network selection techniques for 6G. 2) Virtual lab web development for Analog and Digital Communication."
Expected outcome	Develop an interactive web-based virtual lab that simulates key experiments in analog and digital communication, enhancing remote learning through real-time signal visualization and user engagement." 2) Design low-power network selection algorithms for seamless and efficient 6G connectivity.

Research Internship- 2025

Title of Research Internship Module Design and analysis of hybrid renewable energy system	
Module Coordinator Dr Yashwant Sawle (9575005868) Assistant Professor, Electrical Engineering MITS- Deemed University Gwalior	
Objective	1. Assessment of Renewable Energy Potential 2. Design of Integrated Energy Systems 3. Optimization of Energy Storage Solutions 4. Economic and Environmental Impact Analysis 5. Implementation Strategies and Policy Recommendations"
Expected outcome	1. A detailed map highlights the potential of various renewable energy sources available on the island. 2. A complete design blueprint for an integrated renewable energy system tailored to the island's needs, ensures maximum efficiency and reliability.
Title of Research Internship Module: Computer Vision	
Module Coordinator Dr. Tej Singh (9560402578) Assistant Professor, Centre for AI MITS- Deemed University Gwalior	
Objective	The objective of computer vision is to enable computers to interpret, analyse, and understand visual information from the world, much like human vision does. This involves extracting meaningful insights from images or videos to perform tasks such as: 1. Image Recognition & Classification, 2.Facial Recognition & Biometrics, 3. Medical & Scientific Imaging
Expected outcome	1. Automation & Efficiency, 2. Enhanced Security & Surveillance,

	3. Improved Healthcare & Diagnostics, 4. Augmented & Virtual Reality (AR/VR)

Title of Research Internship Module Imbalanced learning in machine learning	
Module Coordinator Dr Bhagat Singh Raghuwanshi (9993718671) Assistant Professor, Centre for Artificial intelligence MITS- Deemed University Gwalior	
Objective	Handle to imbalance problems
Expected outcome	Concludes significant methods for imbalance learning
Title of Research Internship Module Nanomaterials for new edge nanodevices	
Module Coordinator Dr. VARUN SHARMA (9981088747) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	Investigation of novel Xene materials for spin filtering and anode material design applications
Expected outcome	Learn tools for ab-initio calculations, Spin filter realization using Xnene, Publication in reputed journal and conference

Research Internship- 2025

Title of Research Internship Module Machine learning/Social Networking	
Module Coordinator Dr Shubha Mishra (9713439657) Assistant Professor, Centre for Artificial intelligence MITS- Deemed University Gwalior	
Objective	To make students aware about online social networking, it's utility, scope, challenge, understanding anomalous human behaviour through digital content and providing technical solutions for the same
Expected outcome	Studel tolime social networking data and understanding social trafficking, cyber crimes and ways to reduce them.nts will be able to work on re
Title of Research Internship Module Security & Privacy in Internet of Things using Machine Learning	
Module Coordinator Dr. Mir Shahnawaz Ahmad (7006080550) Assistant Professor, Centre for Artificial Intelligence MITS- Deemed University Gwalior	
Objective	To design a security framework for the detection of malicious network attacks in the Internet of Things network using machine learning techniques.
Expected outcome	To analyze various security threats, risks, vulnerabilities and malicious attacks in the Internet of Things (IoT) Network. To identify relevant IoT network datasets and perform data science techniques for efficient attack detection. To examine the performance of different machine learning and deep learning techniques for effective attack detection in IoT networks. To develop the skills in project management, teamwork, and communication through collaborative research efforts and project presentations. To develop the research paper writing & presentation skills.

Research Internship- 2025

Title of Research Internship Module Corrosion Assessment and microstrfucture analysis of Composite Materials for Industrial Applications	
Module Coordinator Dr Amit Aherwar (9826317058) Mechanical Engineering MITS- Deemed University Gwalior	
Objective	To evaluate the corrosion behavior and underlying microstructural characteristics of composite materials used in industrial environments, with the aim of identifying degradation mechanisms and enhancing material performance and longevity under corrosive conditions.
Expected outcome	Identification of critical environmental factors (e.g., pH, temperature, humidity, salt exposure) that accelerate corrosion in composite systems.
Title of Research Internship Module Machine Learning	
Module Coordinator Dr. Punit Kumar Johari (9425618829) Information Technology Dept. MITS- Deemed University Gwalior	
Objective	To gain practical experience in applying machine learning techniques to real-world problems, enhance understanding of data preprocessing, model development, and evaluation, and contribute to projects that involve predictive modeling, data analysis, and algorithm optimization.
Expected outcome	To develop a functional and optimized machine learning model or framework that addresses a specific problem or use case, supported by empirical analysis and performance evaluation. The internship should result in a technical report or publication-quality documentation detailing the methodology, findings, and insights, potentially contributing to ongoing research or product development within the department/Institute.

Research Internship- 2025

Title of Research Internship Module To develop AI based model for ECG signal analysis	
Module Coordinator Dr R. P. Narwaria (9301950530) Assistant Professor, Electronics Engineering MITS- Deemed University Gwalior	
Objective	To develop AI based model for ECG signal analysis
Expected outcome	To develop and evaluate deep learning models for ECG signal analysis that demonstrate reliable performance in tasks such as arrhythmias detection or classification.
Title of Research Internship Module Wireless Sensor Networks	
Module Coordinator Dr. Gagandeep Kaur (6265610262) Assistant Professor, Computer Science and Engineering MITS- Deemed University Gwalior	
Objective	To develop practical research skills and deepen theoretical knowledge in Wireless Sensor Networks by engaging in the design, simulation, and analysis of sensor-based systems for real-world applications such as environmental monitoring, healthcare, smart cities, or industrial automation. The internship aims to contribute to innovations in areas such as energy efficiency, data routing, etc with WSNs
Expected outcome	This research internship focuses on exploring the design, implementation, and optimization of Wireless Sensor Networks for real-world applications. It aims to address key challenges such as energy efficiency, reliable data transmission, etc. The outcome includes a documented project or prototype and a deeper understanding of WSNs.