

Department of Electrical Engineering
EE-401 Final Year Design Project
Project List



F/SOP FYDP/02/00

Batch	2022	Semester	Fall 2025	
S.no.	Project title	Student name	Supervisor/co-supervisor	Industry
1	Development of data-driven load flow analyzer using deep learning tools	Sohaib Uddin Muhammad Waleed Hammad Babar Mubashir Ali	Mr. Shariq Shaikh	
2	Modelling of a 349 MW / 698 MWh Battery Energy Storage System (BESS) & designing of Harmonic Filter for a 400 kV Network.	Eman Imtiaz Murtaza Muhammad Ali Saad Ur Rahman Fasiha Ahmed	Dr. Abdullah Munir	
3	Design of a Smart Multi-Source Microgrid with SIPROTEC 5 Protection and IEC 61850 Communication.	Shajia Shakeel Usmani Syeda Samra Naqvi Fazla Shamim Rufia Noor	Dr. Beenish Sultana	Ms. Hiba Rafique (SIEMENS)
4	Development of a Coded Logic System for Proactive Transformer Health Monitoring	Hiba Tasbeela Zain Sidra Nadeem Rizwana Hoor Khan	Dr. Beenish Sultana	Ms.Ifrah Saiffe (K Electric)
5	Stochastic Optimization And AI-Based Scheduling Of Smart City Hybrid Energy Systems For Peak Load Shaving.	Aqraba Muzana Nadeem Asim Ali Umair Bin Inayat	Dr. Umbrin Sultana	
6	Simulation-based Early Prediction of Reverse Power Flow in Distribution Networks with High Solar PV Penetration	Talha Huzaiifa Bin Muneeb Muhammad Sajjad Shakib Shafaat Hussain	Dr. Umbrin Sultana	
7	Hardware Design and Implementation of VFD for Three-Phase Induction Motor Control Feedback, RS-485 Communication, and Protection System	Muhammad Subhan Khan Shaheryar Ahmed Gasharib Naveed	Mr. Adnan Ali	

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		Huzaifa Raheel		
8	Simulation and hardware implementation of shunt active power filter for distribution system.	Abdul Rafay Noor Bibi Muhammad Moiz uddin Muhammad Alwaz Yousuf	Mr. Hafiz Muhammad Furqan	
9	Design and Implementation of Rotor Side Converter for DFIG based Wind Energy System with Field Oriented Control	Danish Fakhr E Moosa Esha Khalid Abdul Wasay Alvi Ehtisham Ahmed	Ms. Aiman Najeeb	
10	Design and Simulation of an Early Fault Detection Framework Using Power Line Communication with FSK	Syed Muhammad Hammad Ahmed Syeda Aisha Akbar Saba Sajjad Mahnoor Atif	Dr. Abdullah Munir	
11	Design and Development of a Low-Cost Micro-PMU Using Refined DFT Algorithm on STM32 Microcontroller	Hassan Mujahid Karrar Hussain Aqib Rehman Tariq Hussain	Ms. Aiman Najeeb	
12	Minimizing Common Utility Challenges Caused by Rooftop Solar through Power Factory-Simulations and Analytical Research	Ahmed Ameen Alvi Aiman Sattar Owais Ahmed Eman Qureshi	Dr. Raja Masood Larik	
13	Transient Recovery Voltage (TRV) based Breaker Selection Using Machine Learning Framework	Fatima Asad Lakho Fasih ur Rehman Hamza Saleem Ayesha Siddiqui	Dr. Muhammad Ali Memon	
14	Design and Development of an Intelligent Wind Energy Harnessing System using Deep Learning-based Short-Term Wind Forecasting Models	Khizra tariq Ayesha Kaleem Fatima Naeem Aleena Ather	Dr. Umbrin Sultana	

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15	BrailleRAP: Design-to-Prototype Implementation of a Low-Cost Braille Embosser	Momina Anis Ramsha Sadiq Tehreem Fatima Shamia Zaman	Prof. Dr. Saad Ahmed Qazi	
16	Design and Implementation of Grid Forming Switched Capacitor Multi-level Inverter	Syed Daniyal Ali Shah Mawra Khan Chaudhry Jawad Meerub Rizwan	Ms. Aiman Najeeb	
17	Smart Grid Oriented IEC 61850 Simulation and Configuration Framework for Advanced Substation Automation, Protection, and Communication in Modern Power Systems.	Wajiha Fatima Manahil Akhter Muhammad Ammar Syed Asher Imtiaz	Dr. Muhammad Ali Memon	
18	Design and Implementation of an FPGA-Based AXI-Stream Packet Parser with ACL Firewall for L3/L4 Network Traffic	Aman ul Haq Wania Imtiaz Syed Usman Ali Syed Muhammad Taha	Prof. Dr. Saad Ahmed Qazi	
19	Design an AC microgrid energized by Renewable energy sources for Reliable Grid Operation.	Muazam Bushra Habib Khan Syed Kazim Ali Tirmizi Bisma Riaz	Ms. Najia Naveed	
20	Design and Implementation of a GSM-Based Smart Prepaid Energy Meter with Automatic Billing, Power Theft Detection, and Partial Load Shedding Control	Ahtisham Ahmed Rida Laraib Ather Afza khalid	Dr. Muhammad Ali Memon	
21	Design and Evaluation of Protection Coordination Schemes in Modern Power Systems Using ASPEN OneLiner.	Muhammad Ibaad Ur Rehmaan Muhammad Hammad Patel Muhammad Mohid Hamza Shahid	Dr. Muhammad Ali Memon	
22	Design and Development of an Advanced Grid-Interactive Inverter for Modern Power Systems	Wijdan Ahmed Wasfi Aitezaz Uddin Ahmed Ali	Mr. Nabeel Fayyaz	

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		Syed Ahmar Abdali, Ahsan Mubashir Masood Muhammad Rahim Muhammad Rizwan Qureshi	Dr. Muhammad Ali Memon	
23	Development of a PSCAD-Based Protection Model for Overcurrent and Earth Fault Detection in Power Networks.			
24	Real Time implementation of enhanced phasor estimation algorithm on FPGA 10M50DAF484C7G, targeting IEEE C37.118.1 Compliance.	Syed Tarib Munaib Muhammad Mazhar Naseem Muhammad Areeb	Ms. Aiman Najeeb	
25	Integrated machine learning-Driven Asset lifecycle management for distribution transformers	Mahnoor Kanwal Bibi Tayyaba Neha Irshad Ansharah Anees	Prof. Dr. Saad Ahmed Qazi	
26	Design and Implementation of a Test Bench for Accuracy Verification and Functional Testing of Energy Meters	Samra Adil Abeera sajjad Affan sheikh Muhammad Mohid Sohail	Dr. Muhammad Mohsin Aman	
27	Explainable AI Framework for Early Detection of Diabetic Retinopathy	Saad Siddique Asadullah Ahmed Syed Muhammad Ghazi Chishty Maryam Hashmi	Prof. Dr. Saad Ahmed Qazi	
28	Smart Solar Inverter with Cloud Monitoring & AI Battery Health Prediction	Muhammad Nabeel Waiz-ur-rehman Muhammad moosa Bushra abid	Dr. Muhammad Ali Memon	
29	Modelling, Analysis, and Mitigation of Sub-Synchronous Oscillations (SSO) in Modern Power Systems using PSCAD	Muhammad Rayyan Khan Syed Muhammad Sajjad Raza Zaidi Muhammad Yahya Amin Bilal Ahmed	Dr. Muhammad Mohsin Aman	
30	Design of a Data-driven Model for Predicting Transformer Overload under Contingencies	Muhammad Asad Khan Abdul Rafay Yosuf Muhammad Talha	Mr. Shariq Shaikh	

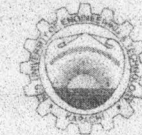
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		Muhammad Omar Shahid		
31	Design and Simulation of Grid-Scale Battery Energy Storage System (BESS) with Reactive Power Stabilization and Short-Circuit Capacity Mitigation.	Muhammad Bilal Rana Ammad Maroof Syed Muhammad Ali Naqvi Syed Musab Ali	Ms. Najia Naveed	
32	ML-Based Predictive Maintenance using Synthetic Data from Digital Twins of Industrial Machinery	Fawad Ahmed Ahmed Bilal Haroon Alvi Muhammad Kabir khan	Dr. Mirza Muhammad Ali Baig	
33	Design a Cost Effective 3-phase Industrial Motor Health Monitoring And Fault Detection System using Deep Neural Network	Syed Huzaifa Ali Ehban shah Haris Ahmed Filza Arif	Ms. Najia Naveed	
34	Designing Advanced Object tracking and interception System	Shaikh Imran Ashraf Muhammad Ibrahim Khan Muhammad Usama tarique	Ms. Uzma Perveen	
35	SoC Design of a RISC-V Processor Integrated with LDPC and Digital Front-End Modules	Ghania Arshad Sidra Khursheed Arsalna Siddiqui Mariam Jawed	Prof. Dr. Saad Ahmed Qazi	
36	Dynamics Stability Enhancement of PV Integrated IEEE-9 Bus System Using PSSE.	Muhammad Wamiq Muhammad Affan Sheikh Kaif-ul-Warah Syeda Amna Ali	Dr. Muhammad Ali Memon	
37	Analysis and Enhancement in Efficiency of 14MWatt Solar Power Project	Sundus Siddiqui Aliza Kashif Warda Waheed Atiya	Dr. Muhammad Ali Memon	
38	Design and Reliability Evaluation of a Lithium-Ion Battery Pack for Low-Voltage Distribution Applications	Laiba Iqbal Alishba Saleem Muhammad Mufeez Rasheed	Dr. Muhammad Mohsin Aman	

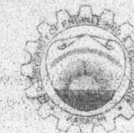
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		Juwairiah Arshad		
39	Fabrication and Performance Evaluation of Lithium-Doped MgTiO_3 - Based Perovskite Solar Cells	Arooma Iftikhar Ramsha Fayaz Alyshba Junaid Abdullah Noman	Dr. Raja Masood Larik	
40	Design and Implementation of synchronization unit for grid connected inverter	Hafiz Muhammad Furqan Muhammad Talha Pervaiz Muhammad Arqum Siddiqui	Mr. Nabeel Fayyaz	
41	Design and Implementation of Modified Cascaded H-bridge Multi level inverter with real time IoT monitoring	Qazi Muhammad Sharjeel Muhammad Ahmed Tayyab Alishba Shaikh Saad Ghauri	Ms. Aiman Najeeb	
42	Integration of Wind and solar energy resources to the grid and study of their impact on power grid using AI	Sakhshi Bajaj Younma Imam Aqsa Hameed Khan Muhammad Muzammil	Dr. Muhammad Ali Memon	
43	Design And Implementation Of Residential Power Quality Monitoring Device	Muhammad Zeerak Butt Hasan Bin Mujahid Haris Hasan Rayyan Asad	Mr. Nabeel Fayyaz	
44	Simulation-Based Design of a 50 MW Power Plant Electrical Network with Protection and Stability Enhancement	Muhammad Umer Kabir Abdullah Muhammad Ahsan Muhammad Soban Jamal Khan	Dr. Muhammad Ali Memon	
45	Adaptive Protection of Transmission Systems with High Penetration of Inverter-Based Resources (IBRs) using AI/Optimization Algorithms	Behroze khan Zuhaib khan Izaan amir Amna Sana ullah	Dr. Raja Masood Larik	
46	Minimize the Impact of Rooftop PV Integration on 11 kV KE Distribution Network with Optimal BESS planning	Saim Zia M.Luqman Hassan Tariq Samama Rafique	Dr. Raja Masood Larik	Mr.Bilal Siddiqui (K Electric)

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47	High Reliability Medium Voltage Drive with Optimized Low-Component Converter Topology	Talha Arham Hasan Ashhad Akhter Umar Farooq Asad	Dr. Muhammad Javed	
48	Design and Modelling of Scalable Solar PV Integrated Battery Energy Storage System (BESS) for Reliability Enhancement	Saqib Ahmed Muhammad Akbar Khan Fahad Bin Saeed Alishba Zaib	Mr. Adnan Ali	
49	Multimodal AI System for Early Fault Detection in Induction Motors	Quratulain Saifuddin Ilsa Fatima Alishba Arif Laiba Ahmed	Mr. Fezan Rafique	
50	Design and Implementation of an Adaptive Relay Protection Scheme for Renewable Energy Instability Mitigation	Affan Khan Fuzail ul Haq Baig Irza Munawar Alizeb Arbab	Ms. Shahnaz Tabassum	
51	Develop a low cost solar powered Air Conditioning system alternative to traditional Air Conditioning system	Wali Jan Maaz Akhtar Alyan Zahid Syed Hassan Ali Shah	Dr. Muhammad Mohsin Aman	
52	Induction Motor Health Monitoring and Fault Detection Using multi- dimensional Vibration Analysis with IoT based Dashboard	Syed Hassan Ali Shah Saira Abdul Waheed Alisha Siddique Kausar Bibi	Mr. Muhammad Hassan ul Haq	
53	Performance Optimization of Deep reinforcement learning for a cart-pole balancing	Hussain Umer Muhammad Taseen Aftab Muhammad Umer Siddiqui Muhammad Anas uddin	Dr. Mirza Muhammad Ali Baig	

FYDP Coordinator

Beirish

FYDP Review Committee Head

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Chairperson

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