



The Power Systems and Energy (PSE) specialization prepares students to address the critical challenges of generating, transmitting, and distributing electrical energy in an increasingly sustainable and efficient manner. This program covers a wide range of topics, including conventional and renewable energy sources, smart grid technologies, power electronics, and system stability and protection. Students gain a solid foundation in electrical engineering principles and progress to advanced subjects through a combination of theoretical instruction, practical lab sessions, and industry-focused training.

What You'll Learn?

-  Power Generation & Distribution
-  Smart Grid Technologies
-  Renewable Energy Systems (Solar, Wind, Hydro)
-  AI for Energy Management
-  Electrical Machines & Drives
-  Power System Analysis & Control
-  Power System Protection & Security
-  Industrial Power Systems
-  Energy Storage & Conversion Systems

Program Features

-  Modern labs for power systems and renewables
-  Industry-driven Final Year Projects
-  Internship opportunities with energy providers and regulators
-  Use of real-world simulation tools such as MATLAB, PSCAD, DIgSILENT, COMSOL
-  Integration of AI & IoT in smart grid systems

Why Choose PSE?

Explore how the world is powered — from renewable energy sources and smart grids to high-voltage transmission and energy storage systems. In this track, students blend theory with hands-on experience to prepare for careers in sustainable energy and modern electrical infrastructure. It's an ideal path for students passionate about building a greener, smarter future.

Department of Electrical & Computer Engineering
Sultan Qaboos University

Email: engece@squ.edu.om

Tel: (+968) 24141330, (+968) 24141390

Location: College of Engineering, Muscat, Oman



Career Pathways

- ✓ Power Systems Engineer
- ✓ Renewable Energy Consultant
- ✓ Smart Grid Engineer
- ✓ Energy Analyst
- ✓ Electrical Design Engineer
- ✓ Utility Operations Engineer
- ✓ Protection & Control Specialist
- ✓ R&D Engineer in Energy Tech

Career Opportunities for PSE Graduates

- ✓ National Utility Companies (e.g., OETC, MEDC, Nama Group)
- ✓ Oil, Gas and Energy Industries: PDO, OQ, Major Electricity Providers.
- ✓ Government & Regulatory Bodies: TRA, ITHCA, Ministry of Transport and other ministries...
- ✓ Defense & Aerospace: Royal Oman Armed Forces, Royal Oman Police.
- ✓ Renewable Energy Developers
- ✓ Government Ministries (Energy, Environment)
- ✓ Consulting Firms & EPC Companies
- ✓ Research Institutes & Startups

PSE FOCUS

⚡ Power Generation & Renewable Energy

Covers the fundamentals of electrical power generation from both conventional (thermal, hydro, nuclear) and renewable sources (solar, wind, biomass). Students learn to evaluate system efficiency, environmental impact, and integration of renewables into the grid.

⚡ Power Transmission & Distribution

Focuses on how electrical energy is transmitted and distributed across large networks. Topics include high-voltage systems, transmission line modeling, substations, transformers, and smart grid technologies for efficient power delivery.

🛡️ Power System Protection & Stability

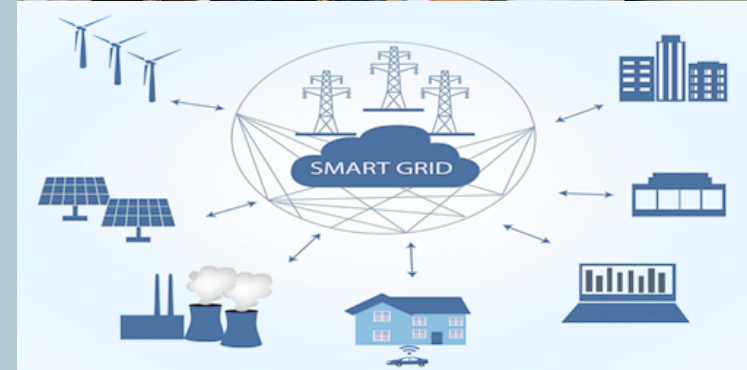
Students study how to maintain system reliability through fault detection, relays, circuit breakers, and stability analysis. Courses include modeling and simulating transient behaviors and designing robust protection schemes.

💡 Energy Management & Smart Grids

Introduces strategies for demand-side management, energy efficiency, and smart metering. Covers the role of IoT, automation, and data analytics in building intelligent energy systems that adapt to user behavior and grid conditions.

🔧 Power Electronics & Control Systems

Explores converters, inverters, and control systems essential for interfacing renewable energy and storage with the grid. Students gain hands-on experience with devices used in electric vehicles, industrial drives, and battery systems.



Power System and Energy (PSE)