



University of Strathclyde Engineering

**PTDF College of Petroleum and Energy Studies Kaduna (CPESK)
University of Strathclyde – Research Areas for Split-Site PhD (V2 April 2025)**

College of Petroleum and Energy Studies				
Faculty of Engineering				
	Petroleum and Chemical Engineering	Mechanical and Materials Engineering	Civil and Environmental Engineering	Electrical and Computer Engineering
Areas of Strathclyde expertise	<ul style="list-style-type: none"> - Chemical Engineering - Biochemical Engineering - Polymer Engineering - Reservoir Engineering - Oil and Gas Engineering 	<ul style="list-style-type: none"> - Mechanical Engineering - Renewable Energy Engineering - Gas Turbine Engineering - Mechatronics Engineering - Metallurgical Engineering - Materials Engineering - Pipeline Engineering - Corrosion Engineering 	<ul style="list-style-type: none"> - Civil Engineering - Structural Engineering - Offshore Engineering - Environmental Engineering - Marine Engineering 	<ul style="list-style-type: none"> - Computer Engineering - Electrical Engineering - Systems Engineering - Electronic Engineering - Energy and Power Engineering - Nano-Technology
Split-site PhD	<p>Chemical Engineering</p> <ul style="list-style-type: none"> - Electrochemical energy devices; hydrogen fuel cells; digital twins and multi-scale modelling of chemical processes; chemical manufacturing; valorisation of CO₂ for the production of fuels; clean bioenergy technologies; sustainable nano-materials; renewable hydrogen/syngas production; solid oxide fuel/electrolysis cells; liquid transportation fuels and value-added chemicals from organic solid wastes; advanced carbon materials (e.g., carbon nanotubes, mesoporous carbon) 	<p>Mechanical Engineering:</p> <ul style="list-style-type: none"> - Pressure Vessel Design: Limit Load, Shakedown, Ratchetting, Creep. - Structural Integrity and Fitness for Service: Fracture and Fatigue. - High Temperature Mechanics. <p>Metallurgical Engineering</p> <ul style="list-style-type: none"> - Advanced Joining & Surface Engineering: Welding Processes, Weld Metallurgy, Metal Matrix Composites. - Friction Stir Welding. <p>Materials Engineering</p> <ul style="list-style-type: none"> - Advanced Composite Materials: Design, 	<p>Civil Engineering:</p> <ul style="list-style-type: none"> - Geotechnical engineering; experimental geomechanics; Hydro-mechanical behaviour of soils and geomaterials; Constitutive & numerical modelling of soft soils; Ground barrier technology for pollution and fluid flow control; Biocements <p>Structural Engineering:</p> <ul style="list-style-type: none"> - Intelligent infrastructure systems; smart sensors for infrastructure monitoring; structural health monitoring; predictive analysis for infrastructure maintenance; automated maintenance; risk 	<p>Electrical Engineering Power and Energy Engineering</p> <ul style="list-style-type: none"> - high voltage technologies, power electronics, power systems, renewables, offshore wind/marine power, asset management and condition monitoring, nuclear (with ANRC) <p>Systems Engineering</p> <ul style="list-style-type: none"> - systems decomposition and integration; management of complexity and uncertainty within engineering, business and socio-technical systems; processes for managing the lifecycle of systems; verification and validation

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<p>from polymeric wastes (e.g., plastics, composites).</p> <p>Oil and Gas Engineering - Combustion; trace gas detection; direct flame fuel cells; removal of toxic substances from effluents and energy applications; corrosion mitigation;</p>	<p>Characterisation, Manufacture and Recycling. - Materials Processing.</p> <p>Corrosion Engineering - Tribology & Tribo-Corrosion: Erosion, Corrosion, Micro-Abrasion, Sliding Wear, Cavitation, Slurry Erosion-Corrosion. - Corrosion Fatigue.</p> <p>Renewable Energy Engineering - technology development and in-field testing/ proving, energy systems modelling/ software development and proving, energy demand modelling, analysis and restructuring, and energy policy and techno-economic development for decision support.</p> <p>Mechatronics Engineering</p> <p>Pipeline Engineering - marine pipeline design process; pipeline hydraulics analysis, installation methods, environmental loading and stability, materials selection, and corrosion prevention.</p> <p>Precision/Micro/Nano Manufacturing</p>	<p>assessment of structures under natural hazards; seismic assessment and resilience; deterioration of building materials; advanced materials and nanotechnology; reuse of wastes in construction materials</p> <p>Environmental Engineering: - Soil contamination, remediation and restoration; hydrocarbon pollution remediation; Water sanitation & hygiene; Stormwater and flood management; Green infrastructure and climate change resilient cities; wastewater treatment; floods, droughts and climate change; multi-hazard climate risk management; Use of contaminated land for renewable energy; circular economy.</p> <p>Marine Engineering: - Marine Engineering; Autonomous Marine Vehicles; Green Shipping; Human Factors in the Marine Environment; Marine Floaters and Hydrodynamics; Materials in the Marine Environment; Offshore Risk & Reliability; Offshore Structural Integrity; Pipeline Engineering; Safety Offshore; Structural Health Monitoring for Offshore Systems; Subsea Engineering</p>	<p>Nano-Technology</p> <p>Robotics and Automation</p>

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Faculty of Computing and Communication Technology		Faculty of Health and Environmental Sciences		Faculty of Energy Law and Management Sciences
Communication Technology		Environmental Sciences	Health Sciences	Economics, Finance and Management
Areas of Strathclyde expertise	<ul style="list-style-type: none"> - Telecommunication Technology - Information and Communication Technology - Telecommunications and Wireless Systems - Telecommunications and Internet Technologies 	<ul style="list-style-type: none"> - Environmental Sciences - Environmental Assessment and Management - Pollution and Environmental Control 	<ul style="list-style-type: none"> - Occupational and Environmental Health - Air Pollution and Health - Environmental Public Health - Environmental Health Science 	<ul style="list-style-type: none"> - Procurement and Supply Chain Management - Operations and Supply Chain Management
Split-site PhD	<p>Telecommunication Technology - Particular expertise in 5G, LiFi</p> <p>Information and Communication Technology</p> <p>Telecommunications and Wireless Systems</p> <p>Telecommunications and Internet Technologies</p> <p>Also available: - robotics, sensing and inspection</p>	<p>Environmental Sciences Antibiotic resistance; Pathways of microbial infection.</p> <p>Environmental Assessment and Management Environmental impact assessment; Strategic environmental assessment; Environmental assessment as a design tool</p>	<p>Air Pollution and Health Air quality and risk at oil & gas and other industrial sites; Air pollution exposure assessment and epidemiology studies of the health effects of pollution</p>	<p>Procurement and Supply Chain Management/Operations and Supply Chain Management Business model development; decision making, modelling and optimisation; information and knowledge management; innovation management; forecasting, planning and control; performance measurement; quality and process management; systems engineering; supply chain and manufacturing; sustainability assessment; operations management; through-life engineering</p>