School of Computing, Engineering, and the Built Environment
Edinburgh Napier University

PHD STUDENT PROJECT

Application instructions:
Detailed instructions are available at :
https://www.napier.ac.uk/research-and-innovation/doctoral-college/how-to-apply

Prospective candidates are encouraged to contact the Director of Studies (see details below) to discuss the project and their suitability for it.

Project details

Supervisory Team:
- DIRECTOR OF STUDY: Dr Mina Jowkar (Email: m.jowkar@napier.ac.uk)
- 2ND SUPERVISOR: tbc

Subject Group: Built Environment

Research Areas: Built Environment, Environmental Engineering, Construction Management

Project Title: A Framework for Implementing Material Passports in the UK Construction Industry

Project description:
The UK construction industry is undergoing a transformative shift toward sustainability, driven by the need to reduce carbon emissions, minimise waste, and improve resource efficiency in this sector. One promising strategy to achieve these goals is the adoption of Material Passports. A Material Passport is a digital document that contains detailed information about the materials used in a building, including their composition, origin, and potential for reuse or recycling. Implementing Material Passports can play a crucial role in advancing the circular economy, ensuring compliance with sustainability standards, and promoting more sustainable construction practices. The aim of this research is to promote the adoption of Material Passports in the UK construction industry and establish a standardised framework for creating and managing Material Passports.

Candidate characteristics

Education:
The candidates should have a first degree and academic background in Environmental and Construction-related disciplines such as Construction Technology, BIM, Life Cycle Assessment and Circular Economy, Building Materials, Waste Management, Environmental Engineering, etc. Applicants from diverse relevant backgrounds are encouraged to apply

Subject knowledge:
The applicants should demonstrate deep knowledge in sustainability in construction, including concepts like the circular economy, material life cycle and waste assessment, carbon footprint reduction, and resource efficiency. Good understanding of building materials properties, lifecycle, and environmental impacts are also required.

Essential attributes:
- Familiarity with BIM and simulation software to assess building energy performance and carbon footprint is essential

Desirable attributes:
- Awareness of the UK-specific standards and certifications, such as BREEAM, LEED, or Passivhaus is beneficial
- The ability to design research studies, including qualitative and quantitative methods, surveys, and case studies are also desirable