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

PHD STUDENT PROJECT

Funding and application details

Funding status: Self funded students only

Application instructions:
Detailed instructions are available at https://blogs.napier.ac.uk/scebe-research/available-phd-student-projects/

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: Dan Ridley-Ellis (Email: D.Ridley-Ellis@napier.ac.uk)
- 2ND SUPERVISOR:

Subject Group: Built environment

Research Areas: Built Environment, Manufacturing Engineering, Structural Engineering, Structural Mechanics, Materials Science (other)

Project Title: Grading for reuse and remanufacturing of structural timber

Project description:

Do you want to improve the way wood is used in buildings? Do you want to play a key role in getting Europe towards its 2050 net zero target?

The renewability of timber is one of its primary advantages as a construction material. However, there are still many reasons to look at improving the way we can reuse wood from building deconstruction.

Current standards for building design, and timber product manufacture, require strength grading on a basis that is not compatible with reclaimed wood, and similarly varied new timber from less usual sources. In the near future, new

standards will be written for grading recovered wood - but there are important questions that will need to be answered before that can happen.

The research will cover:

- Ways to non-destructively assess recovered wood
- Ways to compensate for the effects of prior grading and damage
- Ways to sort and classify recovered wood with predictable properties
- Routes to standardisation within the European system
- The work will take place in one of Europe's leading research groups for structural timber grading and will link into other projects working towards similar aims - at Napier University and across Europe.

References:

[1] Ridley-Ellis, D., Stapel, P., & Baño, V. (2016). Strength grading of sawn timber in Europe: an explanation for engineers and researchers. European Journal of Wood and Wood Products, 74(3), 291-306. https://doi.org/10.1007/s00107-016-1034-1

Candidate characteristics

Education:

A first-class honours degree, or a distinction at master level, or equivalent achievements in wood science and technology, structural engineering, forestry or a similar related subject.

Subject knowledge:

- Engineering mechanics and mathematics

Essential attributes:

- Experience of fundamental concepts of materials and engineering mechanics
- Competent in laboratory work, data management and processing
- Knowledge of the ways timber can be used in construction
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

Desirable attributes:

- Knowledge of wood science, timber engineering, wood processing or forestry. Familiarity with standards and certification of construction products. Ability to use R, or other programming language.