

JOB DESCRIPTION

Job Title: KTP Associate

Grade: £35,454 per annum, fixed for the project duration

Department: School of Computing and Mathematical Sciences

Responsible to: Academic Supervisor (Professor in Computational Engineering) and Industry Supervisor (Associate Director Beckett Rankine)

Responsible for: N/A

Key Contacts: University of Greenwich: Professor in Computational Engineering and Professor in Structural Analysis and Heritage Conservation.
Beckett Rankine: Associate Director, Project Engineer, Director.
Knowledge Transfer Partnership: KTP Advisor.

Standard Occupational Classification (SoC code): TBC

Non-Contractual Nature of Role Profile: This role profile is non-contractual and provided for guidance. It will be updated and amended from time to time in accordance with the changing needs of the University and the requirements of the job.

PURPOSE OF ROLE

Lead an innovative Knowledge Transfer Partnership (KTP) project between Beckett Rankine and the University of Greenwich (School of Computing and Mathematical Sciences). Focus on developing a pioneering methodology for the structural analysis of timber ships using Finite Element Analysis (FEA). Aggregate rheological properties and advanced smearing techniques will be utilised to create a robust, flexible modelling framework for structural preservation of historic timber structures.

The role is defined to bridge between academic excellence and industry application. The KTP Associate will manage the end-to-end project lifecycle including:

- Computational Modelling: Developing sophisticated 3D geometric models of complex timber structures, with focus on historic wooden ships.
- Structural Simulations and Analysis: Assessing rheological models and applying advanced FEA techniques.
- Structural Intervention: Designing and evaluating engineering solutions to conservation of historic vessels.
- Strategic Management: Overseeing project milestones while collaborating closely with team members and stakeholders.

The KTP Associate will carry out the above main project activities with support and under mentorship of industry and academic leaders at Beckett Rankine and the University of Greenwich, respectively. The KTP project will give the Associate unique experience in the modelling and assessment of complex structures, providing exceptional grounding for a career in heritage conservation and advanced structural modelling.

The KTP Associate will be based full-time in Beckett Rankine's Westminster offices in Central London and will be integrated into the company. Beckett Rankine is an independent maritime consultancy, working across marine civil, structural and geotechnical engineering, maritime heritage conservation and naval architecture. Beckett Rankine has gained extensive experience in managing the conservation of historic ships and is aiming to expand into the technical analysis of these vessels and similar structures.

KEY ACCOUNTABILITIES

Team Specific:

- Review historic construction information and photographs to develop an accurate understanding of the design and construction of historic timber vessels. Comparison to site measurements and observations, and assessment of differences observed.
- Develop 3D models of historic vessels using Rhino3D CAD software and transform these into finite element mesh models as necessary to carry out structural Finite Element Analysis (FEA).
- Review and evaluate rheological approaches for modelling the structural properties of complex timber structures incorporating different timber species and the effects of age and decay. Through testing and comparison, determine suitable methodologies for key structural forms.
- Develop composite modelling techniques to analyse the structural performance of historic timber vessels. Through two case studies, develop an adaptable methodology and workflow suitable for use on both historic ships and other complex structures.
- Assess the performance of structural interventions and evaluate them considering their cost and impact on historic fabric.
- Carry out the design of supporting structures and other measures to support complex structural forms.
- Facilitate knowledge transfer within the company, delivering training, workshops, and creating standard operating procedures to embed new processes.
- Contribute to the dissemination of results by publication in journals and presentation at national and international meetings and conferences.

Generic:

- Assist the School of Computing and Mathematical Sciences in achieving the relevant KPIs.
- Contribute to research centre/school plans, activities, and efficient working practices.
- Participate, as appropriate, in public engagements, outreach and related activity.
- Demonstrate a commitment to equality, diversity and inclusion through engagement with university initiatives.
- Promote your work and represent your discipline and the work of the University internally and externally and take a proactive approach to research integrity and ethical, good practice.

Managing Self:

- Actively participate in established professional development framework activities, including those provided by the University and Beckett Rankine.
- Behave in a manner which reflects the University values and creates a positive environment for work and study.

Core Requirements:

- Adhere to the University's policies on Equality, Diversity and Inclusion and Information Security.
- Ensure compliance with Health & Safety, Data Protection and Equality Legislation.
- Adhere to the university's Sustainability policies, including the Carbon Management Plan, and carry out duties in a resource efficient way, reflecting the shared responsibility of minimising the university's negative environmental impacts wherever possible.
- Adhere to current legal requirements and best practice relating to digital content and accessibility, including Web Content Accessibility Guidelines when creating digital content.

Additional Requirements:

Undertake any other duties as requested by the line manager or appropriate senior manager, commensurate with the grade.

This is a professional, demanding role within a complex organisation with an ambitious strategic plan and agenda for change. The role holder will be expected to show flexibility in working arrangements, including working hours, to ensure that the research unit (Computational Mechanics and Reliability Group) at the Centre for Advanced Simulation and Modelling delivers the required level of service.

Freedom of speech and academic freedom:

In any matter falling under this job description, the university will have particular regard to, and place significant weight on, the importance of freedom of speech within the law, academic freedom and tolerance for controversial views in an educational context or environment. The University's commitments to freedom of speech and academic freedom are set out in the [Freedom of Speech Code of Practice](#). In the event of any conflict between this job description and the Freedom of Speech Code of Practice, the Freedom of Speech Code of Practice will take precedence.

KEY PERFORMANCE INDICATORS:

- Achieve the KTP project milestones and outputs as defined in the KTP project workplan.
- Imbed the new methodology for modelling historic vessels within the partnering company.

KEY RELATIONSHIPS (Internal & External):

- Internal (University of Greenwich): At the University, the prime relationships of the KTP Associate will be with the two academics who will supervise the project. The KTP Associate will also have relationships with members of their research unit (the Computational Mechanics and Reliability Group) and with senior leaders of the School of Computing and Mathematical Sciences.
- External (Beckett Rankine): During the project, the KTP Associate will be based at the company and will have relationships with the members of the Beckett Rankine's engineering team involved with the project, specifically (but not only) the industry supervisor, the KTP-related project engineer, and Beckett Rankine's Director. The Associate will also interact with historic ship owners as stakeholders in the conservation projects supported by the Knowledge Transfer Partnership activities. The associate will also have relationship with the external Innovate UK KTP advisor.

PERSON SPECIFICATION

EXPERIENCE:

Essential Criteria

- Practical experience in 3D modelling of structures using software such as AutoCAD, Revit or Rhino.
- Exposure to FEA tools (e.g. ANSYS, SAP, Autodesk Robot).
- Relevant work experience to the role, or academic experience beyond that gained through their undergraduate studies.
- Experience in structural assessment and design.

Desirable Criteria

- Experience in the application of FEA tools related to stress predictions.
- Experience in the conservation or analysis of ships/vessels.

SKILLS:

Essential Criteria

- Ability to produce 3D models both of existing and new structures.
- Solid theoretical understanding of structural engineering principles and theories, including mechanical behaviour.
- Ability to undertake fundamental structural design calculations.

Desirable Criteria

- Knowledge of the principles of FEA.
- Understanding of timber analysis and design.

QUALIFICATIONS:

Essential Criteria

- A bachelor's degree in civil or Structural Engineering, or equivalent qualification in Naval Architecture.

Desirable Criteria

- N/A

PERSONAL ATTRIBUTES:

Essential Criteria

- Strong analytical abilities and proactive problem-solving.
- Effective written and verbal communication, and personal and social skills.
- Ability to work independently and collaboratively in both academic and commercial settings.

- Interest in the conservation of historic vessels or structures.
- We are looking for people who can help us deliver the [values](#) of the University of Greenwich: Inclusive, Collaborative and Impactful.

Desirable Criteria

- N/A