

Research Fellow / Engineer (Nature) - TZY5 Singapore Institute of Technology

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Posted Dec. 20, 2024, set to expire Jul. 5, 2025

Job Title Research Fellow / Engineer (Nature) - TZY5
Department Engineering
Institution Singapore Institute of Technology
Singapore, , Singapore

Date Posted Dec. 20, 2024

Application Deadline Open until filled

Position Start Date Available immediately

Job Categories Research Scientist/Associate

Academic Field(s) Ocean Engineering
Ecological and Environmental

Job Website <https://careers.singaporetech.edu.sg/cw/en/job/498821/research-fellow-engineer-nature-tzy5>

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Job Description

Research Fellow / Engineer (Nature) - TZY5

Job no: 498821

Department: Engineering

Contract type: Contract

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As a University of Applied Learning, SIT works closely with industry in our research pursuits. Our

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research staff will have the opportunity to be equipped with applied research skill sets that are relevant to industry demands while working on research projects in SIT.

The researcher will be part of the team of the MCCS NATURE Project (

[https://www.nparks.gov.sg/Cuge/Programmes-](https://www.nparks.gov.sg/Cuge/Programmes-Schemes/Research%20Programmes/MCCS%20Programme)

[Schemes/Research%20Programmes/MCCS%20Programme](https://www.nparks.gov.sg/Cuge/Programmes-Schemes/Research%20Programmes/MCCS%20Programme)). The primary role involves developing and validating CFD models to study wave attenuation by mangroves, seagrass, and coral.

Responsibilities include calibrating simulations with experimental data, analyzing shear coefficients and drag forces, and contributing to interdisciplinary research on coastal protection, with an emphasis on delivering accurate and impactful modeling insights.

Key Responsibilities

- Participate in and manage the research project with Principal Investigator (PI), Co-PI and the research team members to ensure all project deliverables are met.

Undertake these responsibilities in the project:

1. Computational Fluid Dynamics (CFD) Simulations:

- Develop and implement CFD models to simulate the effects of mangroves, seagrass, and coral on wave attenuation.
- Conduct parametric studies to analyze wave interaction with natural coastal ecosystems under varying conditions.
- Optimize the model to predict shear coefficients, drag forces, and energy dissipation.

2. Experimental Calibration and Validation:

- Collaborate with experimental teams to obtain data from wave flume tests and field studies.
- Calibrate CFD models using experimental data to ensure accurate representation of physical phenomena.
- Validate simulation results to confirm reliability and applicability of the models in real-world scenarios.

3. Analysis and Interpretation:

- Extract and analyze key parameters such as drag forces, flow patterns, and wave energy dissipation.
- Evaluate the influence of structural and biological properties of mangroves, seagrass, and coral on wave attenuation.

4. Research Documentation and Dissemination:

- Prepare technical reports, research papers, and presentations to disseminate findings to academic

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and industry stakeholders.

- Contribute to project proposals and progress updates for funding agencies.
- Carry out Risk Assessment, and ensure compliance with Work, Safety and Health Regulations.

5. Collaboration and Mentorship:

- Work closely with interdisciplinary teams, including coastal engineers, marine ecologists, and hydrodynamic specialists.
- Mentor junior researchers and students involved in related projects.
- Assists in co-supervision of Final Year Projects (FYP) or capstone projects students together with the project

6. Tool and Methodology Development:

- Innovate and improve methodologies for CFD modeling of complex natural systems.
- Stay updated with advancements in CFD software and techniques to enhance research outcomes.

7. Project Management Support:

- Ensure timely execution of project milestones related to CFD modeling and validation tasks.
- Coordinate with external collaborators and manage data-sharing protocols.
- Work independently, as well as within a team, to ensure proper operation and maintenance of equipment.

Job Requirements

- PhD or Master degree in a related field with a focus on coastal engineering, oceanography, or hydrodynamics.
- Proficiency in CFD modeling software (commercial software and open source)
- Strong analytical and problem-solving skills.
- Research experience in coastal and ocean waves is preferred.
- Excellent communication (verbal and written) and teamwork abilities

Key Competencies

- Able to build and maintain strong working relationships with people within and external to the university.
- Self-directed learner who believes in continuous learning and development
- Proficient in technical writing and presentation
- Possess strong analytical and critical thinking skills
- Show strong initiative and take ownership of work

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Advertised: 20 Dec 2024 Singapore Standard Time

Applications close: 30 Jun 2025 Singapore Standard Time

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

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