



**Position Title:** PhD Position in Brain Injury Mitigation  
**Position Number:** DP-KMT-1  
**Classification:** Australian Research Council (ARC)-funded PhD Project  
**Faculty:** Faculty of Science, Engineering and Technology (FSET)

## **PhD Position in Brain Injury Mitigation**

### **Funded by Australian Research Council (ARC) Discovery Project (DP) (DP-KMT-1)**

#### **Project Title:**

A new energy absorption system for brain injury mitigation

#### **Project Description**

This research involves investigating and developing a next generation high-energy absorbing helmet pad that will protect the Australian Defence Force soldiers against both ballistic, blunt and blast threats. New fundamental knowledge in the area of high-energy absorbing metamaterials will be obtained by using numerical modelling and experimental studies. A new wearable energy absorbing pad, incorporating synergistic effects of shear-thickening fluid (STF) and cellular structures, will be developed and can potentially be used as the next generation combat helmet liners and accessories.

In this project, the higher degree research (HDR) candidate will work closely with the Swinburne supervisors. There will be numerous opportunities for the HDR candidate to get engaged with the defence industries. There are also opportunities to gain experience as research assistant and a sessional tutor during the postgraduate journey.

The scholarship funding is for **3 years but a 6 month extension may be possible upon application**. The successful applicant will be invited to submit an application for this rewarding career opportunity if he or she satisfies the general requirements of entry into a PhD program at Swinburne University of Technology, please see (<http://www.swinburne.edu.au/research/research-degrees/application-process/submit-application/>).

The scholarship offered will be compatible with the standard PhD scholarships in Australian universities (No Tax on PhD stipend), with the additional as follows:

- i. Annual indexation.
- ii. A potential 6 month scholarship extension
- iii. Provisions for paid leave (maximum of 12 weeks/84 days of paid leave, plus provision for paid maternity/paternity leave)
- iv. A thesis allowance (maximum \$840 for a PhD)
- v. Tuition fee waiver up to four years

## Location

This position is mainly located at the Hawthorn campus. However, the incumbent may be required to undertake duties at other facilities in other partnering organisations. Thus, the incumbent must be willing to travel and work at a range of locations.

## Key Responsibility Areas

Research	<ul style="list-style-type: none"> <li>• Conduct research into the design and development of novel design in structures and materials, using both numerical and experimental means.</li> <li>• Conduct computer aided design (CAD), material characterisation, fabricate prototypes, as well as perform finite element (FE) modelling and dynamic testings.</li> </ul>
Collaboration and Communication	<ul style="list-style-type: none"> <li>• Work in close contact with the academic supervisory team and the defence industry partner to ensure clear communication of goals and timely delivery of intermediate results at given milestones.</li> </ul>
Dissemination	<ul style="list-style-type: none"> <li>• Publication of research outcomes in high-quality research outlets, such as high-ranked journals, book chapters and conference contributions.</li> </ul>
Swinburne Behaviours	<p>Commitment to the Swinburne Behaviours of:</p> <ul style="list-style-type: none"> <li>• <b>Communicate</b> – Say it – have the conversation, respect each others' differences, give meaningful feedback and share honestly and openly</li> <li>• <b>Listen and Learn</b> – Hear it, learn from it – learn from one another, actively listen to each other, resolve conflict and be innovative</li> <li>• <b>Collaborate</b> – Share it – work constructively together with a common purpose to achieve the university's goals</li> <li>• <b>Trust</b> – Trust it – be open to and with others, act with fairness and respect, inspire positive expectations and communicate effectively</li> <li>• <b>Act</b> – Do it – have a strong sense of immediacy, take practical action and see it through</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Undertake Division-wide and/or university-wide responsibilities as required.</li> </ul>

## Key Selection Criteria

Candidates are required to respond to each of the selection criteria.		Essential / preferable
<b>Qualifications</b>	• Bachelor (Honours) or Master degree (or equivalent) in Mechanical or Biomechanical or Biomedical Engineering, or similar discipline	Essential
<b>Experience</b>	• Experience in scripting or/and Finite Element (FE) simulation	Preferable
	• Experience in material characterisation and experimental testings.	Preferable
<b>Knowledge</b>	• Knowledge in product design engineering in protective technologies.	Preferable
	• Passion in DIY and fabrication of design prototypes	Preferable
<b>Attributes</b>	• Passionate and have interest in pursuing a research degree.	Essential
	• Able to conduct challenging research independently.	Essential
	• A team player who has good interpersonal skills and can collaborate well with others.	Essential
	• Have experience publishing in good quality international journals.	Preferable
<b>Other</b>	• Australian Citizen or/and Permanent Resident	Preferable
	• English Language Requirement <u>for international applicants</u> (e.g. IELTS: Overall 6.5, No individual band below 6.0) ( <a href="#">Australian Universities English Requirement</a> )	Essential

## Further information and how to apply

Please submit expression of interest (EOI) for this PhD scholarship position to Dr Kwong Ming (KM) TSE ([ktse@swin.edu.au](mailto:ktse@swin.edu.au)) by using email subject "EOI-Swin- DP-KMT-1".

Please include a copy of:

1. your CV,
2. academic degrees (if any),
3. academic transcripts (UG or/and PG if any),
4. English test results (for international applicants) and
5. Copies of journal publications (if applicable).

The EOI is open now until the position is filled.

For further information about the position, please contact Dr Kwong Ming (KM) TSE at:

[ktse@swin.edu.au](mailto:ktse@swin.edu.au)