# Internship Offer

**Topic of the internship (title)**  
Project in Mechanical Engineering

**Proposed dates of the internship**  
Start: 02/09/2024  
End: 20/12/2024

**Scientific and academic objectives of the internship:**  
Conduct quasi-static and dynamic experiments under uniaxial and mixed shear/compression loading directions to analyze the mechanical properties (stability, collapse modes, specific energy absorption, ...) of various Pa12 architectured structures obtained by additive manufacturing. Quasi-static machine and a Split Hopkinson Pressure Bar (SHPB) apparatus will be used with additional advanced measurement techniques such as tracking and Digital Image Correlation (DIC). In the specific case of mixed shear/compression conditions, we aim to develop a special connecting system to detect and measure radial forces. In a second step, FEM modeling approach will be implemented to define digital twins of architectured structures with the better mechanical properties, aiding in lightweight protective structural design.

**Industrial partner**

- **Does the project involve a French industry partner?**  
  No

- **Name**  
  /

- **Role of the industrial partner in the internship project**  
  /

- **Main contact**  
  /

- **Email**  
  /

- **Main contact industrial partner’s branch in Australia**  
  /

- **Email**  
  /

**Australian partner**

- **Is the internship project proposed in the framework of an existing collaboration with an Australian partner university?**  
  Yes

- **Name of the Australian partner institution**  
  Ongoing discussions with Swinburne University

- **Lab/department/team involved in the collaboration**  
  Department of Mechanical Engineering and Product Design

- **Main contact in the Australian partner institution**  
  Pr. Guoxing Lu

- **Function**  
  Associate Dean Research

- **Email**  
  glu@swin.edu.au

**Expected profile of applicant**

- **Level of study**  
  Master or PhD

- **Discipline**  
  Mechanical Engineering

- **Prerequisite knowledge, qualities and skills**  
  Bachelor degree in Mechanical Engineering, autonomy, rigorous scientific approach

- **Language of internship**  
  English

- **Other specific eligibility criteria**  
  /

---

**Additional Information**

*Université Polytechnique Hauts-de-France*

*Pr. Eric MARKIEWICZ*

*Email: Eric.Markiewicz@uphf.fr*

*Phone: +33 3 27 51 13 02*

---

*Ongoing discussions with Swinburne University*

*Department of Mechanical Engineering and Product Design*

*Pr. Guoxing Lu*

*Email: glu@swin.edu.au*