# 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

## 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

### Outside of this ongoing collaboration, will students from other Australian universities be considered by the hosting institution in France?
Yes

## 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
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Je soussigné(e) Eric MARKIEWICZ, Vice-Président Recherche, atteste par la présente que l'Université Polytechnique Hauts-de-France s'engage, en cas de sélection d'un candidat pour le stage Project in Mechanical Engineering proposé dans le cadre de l'initiative Stages en France du programme d'aide à la mobilité Nicolas Baudin :

- à assurer la mise en place de la convention de stage, et le suivi administratif (circuit de signature, validation par les autorités préfectorales) et ;
- à veiller que le candidat recevra une gratification de stage (obligatoire selon le montant minimum en vigueur au moment de la tenue du stage en France). La source du financement de la gratification est issue de la politique Recherche de l'Université Polytechnique Hauts-de-France et est opérée par le Pôle de Relations Internationales dans le cadre du programme de mobilité interne BRIDGE (Boosting Relations through Internship Development, Global Experience, and Education).

Fait à Valenciennes
Le jeudi 29 février 2024
Signature, cachet