

## Faculty of Engineering

### Summer Research Program 2022-2023

Project Title: Failure analysis of 3D-printed alloys used in the aerospace industry

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### Objective

The main aim of this project is to conduct metallography and fracture analyses on failed 3D-printed titanium alloy and/or nickel superalloy samples in order to investigate the root cause of failure.

### Project Details

In the aerospace industry, the service life of components is typically determined based on the predicted rate of crack initiation and growth for a given operation environment. Thus, the student will study 3D-printed samples that have failed under tensile, fatigue and plane-strain fracture conditions to provide insight on how such 3D-printed alloys would perform in service that can be used for the design considerations of 3D-printed aerospace components.

### Prerequisites

None. Training will be provided as part of the project.

### Additional Information

None.