



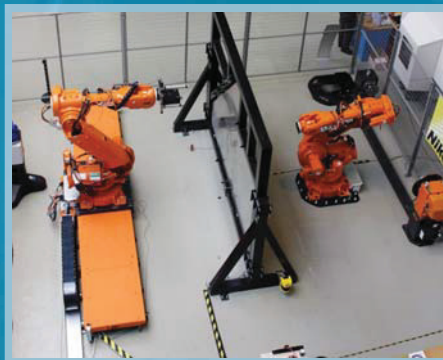
Advanced Manufacturing Research Centre



# MSc(Res) Advanced Manufacturing Technologies

This MSc programme is a collaboration between the Department of Mechanical Engineering and the Advanced Manufacturing Research Centre with Boeing (AMRC). It brings together one of the largest and most respected Mechanical Engineering departments in the UK, an internationally renowned advanced machining and manufacturing centre, and more than 60 key players in global aerospace and advanced manufacturing. Students have the opportunity to undertake taught modules related to cutting edge manufacturing technology, and apply this knowledge to an industrially motivated research project within the AMRC.

The research project itself is proposed and mentored by one of AMRC's industrial sponsors. These include The Boeing Company, Rolls-Royce, BAE Systems, Messier Dowty, Sandvik Coromant, and Renishaw, and span across the



entire manufacturing process, from materials suppliers to assembly specialists. Research projects will focus on a topic that is a current challenge to one of these companies, and students will be asked to investigate potential solutions using some of the most advanced machine tools in the world.

Key subject areas, which are covered by both taught modules and research projects, include:

- Workholding, measurement and assembly
- Novel manufacturing techniques and processes
- Materials science solutions (*including composites*)



## Example Project

### Hossein Mohanna – Productionisation of a Novel Pneumatic Engine Casing Fixture

“Aero-engine casings are thin walled tubular components that are difficult to machine. Typically, they will vibrate during milling and turning operations, leading to slow manufacturing cycle times.

This problem is being accentuated by aero-engine designers moving to more exotic hard to machine superalloys, in order to gain beneficial temperature performance. My project is being run in conjunction with Rolls-Royce, and looks at the design of a novel pneumatic fixture for these parts. The fixture provides damping to the component during machining, meaning cutting tools can be run at optimised parameters.

Through this project we are able to help reduce the manufacturing cycle times of engine casings significantly.”

## Typical Modules

- Advanced Materials and Manufacturing
- High Temperature Materials for Aerospace
- Computer Modelling and Validation
- Control of Structural Vibrations
- Condition Monitoring
- Engineering Composite Materials
- Tribology of Machine Elements
- Robotics and Vision
- Innovation Management
- Technology Strategy and Business Planning



## How to Apply

For more information on entry requirements and how to apply please visit our website:  
[www.sheffield.ac.uk/mecheng/prospectivemsc](http://www.sheffield.ac.uk/mecheng/prospectivemsc)

For further advice and guidance on applying please email the postgraduate admissions department:  
[me-pgadmit@sheffield.ac.uk](mailto:me-pgadmit@sheffield.ac.uk)



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