

MSc Advanced Composites

A Taught Masters Programme providing an in-depth understanding of the key factors that govern the structure, processing, properties and applications of advanced composite materials.

Composites are used widely in industry, and are currently experiencing a rapid expansion in use in high-specification application areas such as commercial aircraft and large-volume automotive. The MSc in Advanced Composites is based in the School of Materials. The School has extensive composites research activities and houses a number of state-of-the-art facilities, such as the National Composites Certification and Evaluation Facility (NCCEF)[†] and the Henry Moseley X-ray Imaging Facility^{††}, and therefore is well equipped to provide excellent training in what will be the key materials technology of the 21st century.

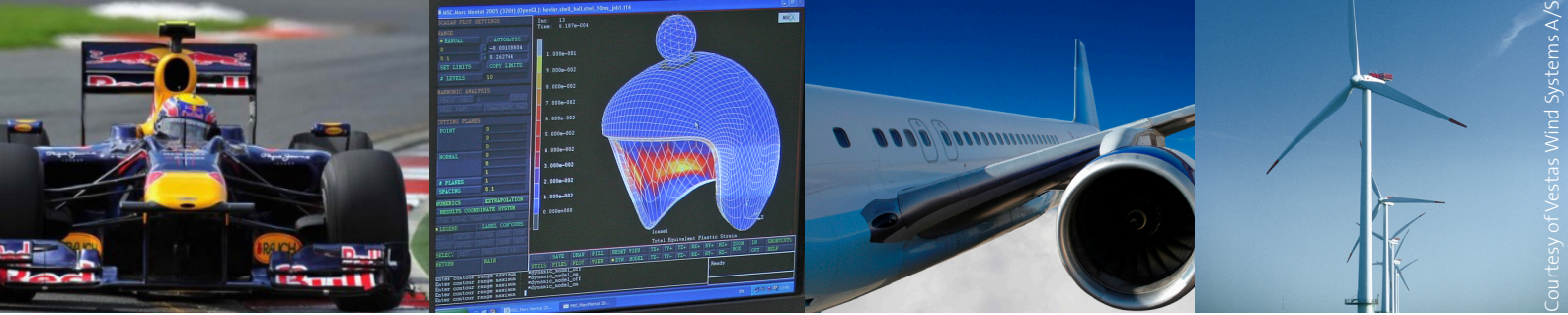
[†] see www.materials.manchester.ac.uk/industry/nationalcompositescertificationandevaluationfacility/

^{††} see www.materials.manchester.ac.uk/research/facilities/moseley/

For an informal discussion about your options for study, call +44 (0)161 306 4826 or email pg-materials@manchester.ac.uk

This programme is currently subject to final approval by the University of Manchester.

The School of Materials at The University of Manchester is the largest school for Materials Engineering in Europe and has the greatest “Research Power” as determined by the 2008 RAE. It offers an unrivalled breadth of research in Materials Science.



Courtesy of Vestas Wind Systems A/S

MSc/PG Advanced Composites

Who is this programme for?

- graduates from chemistry, physics, materials and engineering backgrounds who wish to specialise in advanced composite materials.
- professionals in industry who require the knowledge and skills in the processing, structure and properties of advanced composite materials.

Study Options

You can choose to take the course at Certificate, Diploma or MSc level in full-time or part-time format. Each unit is also available as a stand alone training course for Continuing Professional Development

Entry Requirements

MSc - Lower second class honours degree or above (or equivalent) in chemistry, physics, materials, engineering and related subjects.

English language

TOEFL >570; IELTS >6.5 or equivalent
The University offers three, five and 10-week pre-session English language courses.

Careers

The majority of graduates of our taught MSc programmes go on to fill key posts as materials scientists, technologists, engineers, managers and consultants in academia, industry and research and development. Some advance to PhD degrees within the School.

How to apply

You can apply online now at:
www.manchester.ac.uk/postgraduate/howtoapply

Contact us

For further information, you can email or call us:
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Programme Content

The full MSc programme is made up of six taught course units and a five month research project. The taught units are:

- **Introduction to Materials Science & Engineering (15 credits);** This introductory unit provides an overview of the key principles and concepts important in materials science, required as prerequisites for the more specialised units in the remainder of the course. This unit also sets the scene as to how composites fit into the broad spectrum of engineering materials and why composites are set to become the key materials of the 21st century.
- **Introduction to Advanced Composites Materials (15 credits);** Provides an insight into the components of advanced composites systems and how they work. The unit introduces the micromechanics of long and short fibre composites and laminate systems, as well as the basic modelling approaches for elastic and post yield behaviour, for plastic and brittle fibre and matrix systems.
- **Technical Textiles (15 credits);** Covers a wide range of topics in the latest developments of technical textiles, including: fibre mechanics and fracture, woven preforms for composites, automotive textiles, impact protection and technical applications (e.g. military, medical, aerospace, marine and filtration).
- **Composites Manufacturing (15 credits);** Describes both the details and the underlying principles of the major manufacturing processes for the fabrication of advanced polymer composites. In addition, tooling for advanced polymer composites is described in terms of materials, thermal management and fabrication
- **Composites Design (15 credits);** Detailed coverage of design features (e.g. fibre orientation and ply stacking), design allowables (e.g. defects and fibre distortions), damage tolerant designs, assembly and design for manufacturing processes.
- **Composites Engineering (15 credits);** Covers in detail aspects of durability of advanced composites, such as; fatigue, creep, damage tolerance and environmental effects.

www.manchester.ac.uk/materials/postgraduate