

INTRODUCTION TO

Materials Science and Engineering



MONDAY 1 OCTOBER - FRIDAY 5 OCTOBER 2018

WHO SHOULD ATTEND?

This course is for anyone wanting to acquire an overview of materials science and engineering. It is taught at postgraduate level so will be of maximum benefit to delegates with industrial experience of materials and/or degree-qualified engineers, chemists and physicists who interact with materials scientists/engineers or who are moving into the materials area. There will be plenty of opportunities for discussion with lecturers and other delegates.

The course will:

- introduce the different classes of engineering materials
- give an overview of the processing routes which are available for products from different materials
- describe the structure and properties of a range of advanced materials
- introduce techniques that are available to characterise materials and to model behaviour
- review performance in a range of application areas

KEY POINTS

For course calendar and online registration:

surrey.ac.uk/departments/mechanical-engineering-sciences/short-courses

If you have a question please call:

+44 (0)1483 686122

OUTLINE OF THE COURSE

The course comprises over twenty lectures, interspersed with tutorials and exercise classes to reinforce and supplement the presentations. The lecture content is grouped into four blocks dealing with fundamental principles, specific classes of materials, characterisation techniques and application related topics, as outlined below:

- Crystal Structures
- Defects
- Fundamental Properties of Materials
- Functional Properties of Materials
- Structural Properties of Materials
- Surfaces and Interfaces
- Phase Equilibria
- Steels
- Light Metals
- Introduction to Engineering Ceramics
- Composites
- Structure and Properties of Polymers
- Processability of Polymers
- Characterisation of Materials.
- Corrosion
- Surface Engineering
- Joining
- Materials Selection
- Sustainability

Courses run for one week from Monday morning to Friday afternoon.

Delegates may request a list of local accommodation

MSC IN ADVANCED MATERIALS

This short course is offered as a module in our part-time or full-time Modular MSc Programme in Advanced Materials. Further details of our programme can be found on our web pages:

surrey.ac.uk/postgraduate/advanced-materials-msc-2018

COURSE DIRECTORS

The joint directors are Dr Mark Whiting and Professor Robert Dorey, who is a Chartered Engineer & Scientist.

Dr Mark Whiting

surrey.ac.uk/people/mark-j-whiting

Professor Robert Dorey

surrey.ac.uk/people/robert-dorey

They will be joined by colleagues from across the University of Surrey's materials activity.

These short courses have been approved for "Professional Development" by IOM3

(Institute of Materials, Minerals and Mining).



CENTRE FOR ENGINEERING MATERIALS

The course is delivered from the Centre for Engineering Materials, home to the biggest concentration of materials researchers at Surrey with interests spanning all materials groups from the nanoscale through to macroscopic engineering structures. Across the University there are over 50 academics, residing in six engineering/ physical science departments, for whom materials is a primary research interest:

surrey.ac.uk/centre-engineering-materials

The research, which is recognised as being internationally excellent, spans topics as diverse as the production of graphene through to the mechanical testing of metre long sections of Victorian water mains. Much of the work is underpinned by the University's world-leading capability in characterisation, which comprises both facilities and expertise. Further, Surrey has a history of working in partnership with industry and a proven track record in delivering academically acclaimed and industrially relevant postgraduate courses.

The University is also home to the thriving, much-admired Engineering and Physical Sciences Research Council (EPSRC) Centre for Doctoral Training in Micro and NanoMaterials and Technologies which was established in 2009, and subsequently refunded in 2014, with awards amounting to over £9 million from the EPSRC and sponsorship of engineering doctorate students from over forty companies, to date:

surrey.ac.uk/minmat



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The Institute of Materials,
Minerals and Mining

ACCREDITED PROGRAMME

Introduction to Materials Science and Engineering is also part of the
Advanced Materials MSc programme which is accredited by IOM3

We've made all reasonable efforts to ensure that the information in this publication was correct at the time of going to print in September 2018, but we can't accept any liability for any inaccuracies in the information published, and the information might change from time to time without notice. For the latest and most up-to-date information, please visit our website at surrey.ac.uk