



# MRES MATERIALS SCIENCE AND ENGINEERING

## 材料科学与工程硕士

### OVERVIEW

The MRes Materials Science and Engineering programme aims to train students as active researchers and lifelong learners in materials science and engineering. This programme provides students with a comprehensive understanding of the complex interrelation between material synthesis, processing, structure, properties and performance through theoretical, practical and computational work. Graduates of this programme will significantly contribute to the technological advancements involved in materials science and engineering performance and apply the knowledge gained in the analysis, development and testing of new materials in the modern industry.

The programme encompasses a research-led teaching and technology-enhanced learning approach at all levels of study. It aims to train researchers to resolve the current and future challenges associated with developing advanced materials in science and engineering for energy production, materials for challenging environments, structural material applications, advanced composites and nanomaterials.

The content of the degree programme integrates the engineering discipline and materials chemistry and modelling. The focus is on materials synthesis, characterisation and mechanical testing on nanomaterials and metal alloys. Students of this programme can select their specialisation field by selecting optional modules in either molecular modelling (science) or computational solid mechanics (engineering). Students attending this programme will also be able to work on collaborative projects with the Jiangsu Industrial Technology Research Institute (JITRI), a leading institution in research and development of advanced materials. This provides students with the opportunity to investigate diverse materials (e.g. polymers, ceramics, etc.) during the three semesters of project work which can be linked to industrial placement. In addition, after completing this masters programme, students with an interest in academia and advanced research positions in the industry will also be provided with opportunities to pursue a PhD degree through collaborative research scholarships or self-funded study.

### KNOWLEDGE AND SKILLS

By the time you graduate from the MRes Materials Science and Engineering programme, you will have developed:

- an in-depth theoretical understanding of material properties, structure and mechanical behaviour, as well as the importance of materials science to engineering and other technical applications;
- knowledge and understanding of a wide range of material characterisation and mechanical behaviour techniques, as well as strong research and analytical skills in materials chemistry and engineering;
- practical and problem-solving skills in materials science and engineering, applied in a wide range of theoretical and practical situations; and
- skills to present complex ideas, research methodology and key results and conclusions in written and oral formats



#### START DATE

September 2022



#### ATTENDANCE

Full time



#### DURATION

Two years



#### LOCATION

Suzhou



#### SCHOOL

DESIGN SCHOOL

### MODULES

#### CORE MODULES

Semester 1

- CHE40 3 Nanotechnology and Advanced Materials
- CEN425 Experimental Methods in Materials and Mechanics
- CEN412 Characterisation of Materials

Semesters 3 & 4

- CEN415 Research Project

#### OPTIONAL MODULES

Semester 1

- CHE421 Computational Materials Science

Semester 2

- CEN414 Research Project – Planning and Scheduling

- CEN413 Computational Solid Mechanics

The university offers a broad range of activities aiming to enrich master students' theoretical and experiential learning and professional development. Trainings, workshops and seminars, covering varieties of themes and topics, both generic and subject-specific, are often offered at both university and school/department levels. You may also be provided with opportunities to work as a teaching assistant, research assistant, or intern at XJTLU. Depending on the programme, field trips and company visits may be organized, and invited talks may be given by the industrial experts and professionals. Such activities will not only support you in your programme study, but also develop your personal and professional skills and enhance your overall employability.

