

# Minor in Engineering Materials

[Administered jointly by the College of Design and Engineering (Department of Materials Science & Engineering) and the Faculty of Science]

Engineering materials have played a key role in shaping the evolution of the industry in the past. All the more so, in recent times, materials played a catalytic role in influencing the technological advancement and economic growth of nations. It is not a coincidence that the most advanced nations of the world are also most advanced in the know-how of materials, which ranges from synthetic to biological materials. Rapid strides in advancement in cutting-edge technologies, whether related to life sciences such as in biomaterials, or engineering such as in thin films, are dependent on the further growth in the knowledge related to materials. Some of the materials-sensitive technologies include Bioengineering, Nanotechnology, Information Technology and Wafer Level Packaging. In order to align ourselves with most of the leading economies and universities of the world, it is imperative that we create a network of programmes that drive our students into the exotic world of engineering materials.

The objectives of this multidisciplinary minor programme are as follows:

- To equip students with the fundamentals related to engineering materials, placing particular emphasis on advanced materials, design, manufacturing and processes,
- To enable students to be more aware of the behaviour of materials in engineering applications, and
- To enable students to select the materials for various engineering applications.

## Eligibility

This is a Restricted Minor, open to second or third year undergraduates in College of Design and Engineering under Engineering common admission (except students from Department of Materials Science and Engineering) and Faculty of Science.

## Requirements

To satisfy the Minor in Engineering Materials, a student must read materials related modules equivalent to at least 20 MCs as shown below:

- Two core modules from (MLE1101 or ME2151 or MLE1010 or MLE1111 or MLE1001 or MLE1001B or MLE2301) and (MLE2101 or MLE2102)
- The rest of the modules must be selected from the basket of modules under the track selected by the student
- At least 2 advanced elective modules (level-3000 and level-4000) from the track selected

## Biomedical and Polymeric Materials

BN3301	Introduction to Biomaterials
BN4301	Principles of Tissue Engineering
CN4203R	Polymer Engineering
CM4251	Characterization Techniques in Materials Chemistry
CM4253	Materials Chemistry 2
CM4258	Advanced Polymer Science
MLE3104	Polymeric and Composite Materials
MLE3202	Materials for Biointerfaces (start from AY 17/18)
MLE4202	Selected Advanced Topics on Polymers
MLE4203	Polymeric Biomedical Materials
ME4253	Biomaterials Engineering

## Electronic Materials

CM4254	Chemistry of Semiconductors
CN4216R	Electronic Materials Science
CN4223R	Microelectronic Thin Films
EE4436	Fabrication Process Technology
MLE2105	Electronic Properties of Materials
MLE3105	Dielectric and Magnetic Materials

MLE4207	Microfabrication Process and Technology
MLE4211	Nanoelectronics and information technology
PC3235	Solid State Physics I
PC3241	Solid State Devices
PC3242	Physics of Semiconductor Processing
PC4240	Solid State Physics II
PC4253	Thin Film Technology
PC4259	Surface Physics
PC4264	Advanced Solid State Devices

#### **Structural Materials**

MLE2104	Mechanical Properties of Materials
MLE3102	Degradation & Failure of Materials
MLE3203	Engineering Materials
MLE4212	Advanced Structural Materials
ME3251	Materials for Engineers
ME4251	Thermal Engineering of Materials
ME4254	Materials in Engineering Design
ME4255	Materials Failure

#### **Application Procedure**

Fill in the [application form](#) and submit to home department. Home department will inform student on the application outcome.

**Application must be submitted at least 7 working days before the Module Registration round 1 start date.  
Late application will not be accepted.**