THE UNIVERSITY OF MANCHESTER
Programme Unit Specification

1. GENERAL INFORMATION

Title	Physics for Materials Technology
Unit code	MATS-10232
Credit rating	10
Level	3 (Year-1)
Semester(s)	1
Pre-requisite units	None
Co-requisite units	None
School responsible	Materials (Textiles & Paper Group)
Member of staff responsible	Dr MA Wilding
Other staff involved	None

2. AIMS

The programme unit aims to provide a foundation for the scientific study of materials. Specifically, it acts as preparation for "Polymer Technology" (Level-2) and "Fibre Science" (Level-F).

3. BRIEF DESCRIPTION OF THE UNIT

The unit delivers a range of theoretical and practical topics appropriate to a study of the structure and physical behaviour of matter. The lectures help to build knowledge and confidence in several important subject areas which, whilst being fundamental to many advanced fields of scientific and technical study, may often themselves be perceived as 'difficult'. The approach taken has been to discuss general principles in a way that I believe to be accessible to students of moderate mathematical ability. Where possible the concepts discussed are considered in the context of textile technology.

Main areas covered:

- Fundamental Forces, and Approaches to Understanding the Structure and Behaviour of Matter
- Strength of Materials (stress, strain & elasticity)
- Fundamentals of Thermodynamics
- Vibrations, Resonance and Waves

4. INTENDED LEARNING OUTCOMES *(include unit-specific and contribution to programme)*

Category of outcome	*Students should be able to demonstrate:*
Knowledge and understanding	• knowledge and understanding of the fundamental nature and properties of matter, and its interaction with forms of energy; • understanding of the fundamental factors responsible for the structure and physical behaviour of different types of materials;
Intellectual skills	• appreciation of the importance of applying contrasting yet complementary approaches to scientific investigation; • the ability to apply general physical principles to the study of textile materials; • the ability to analyse physical problems involving materials science;
Practical skills	• use of sources of information (books, library, internet, etc);

	• use of study aids (eg computers & calculators);
Transferable skills and personal qualities	• written communication skills; • mathematical skills, including differential calculus.

5. LEARNING AND TEACHING PROCESSES (*methods of delivery*)

Nominally 24 hours of lectures. This includes ca. 4 hours of revision tutorials

6. ASSESSMENT

Assessment task	Length	Weighting within unit (if relevant)
Written examination paper	Two hours; answer 3Q from 5	100%

Date of current version	24th August, 2009