

MODULE DESCRIPTOR

Guidelines for completion are available¹ as are Red Guides on Developing a new module and Delivering a module².

1. Module Code	MSDE 311	2. Title of new module	Materials Technology
3. Subject Division <i>where relevant</i>	Engineering		
4. Module level <i>4, 5, 6 etc.</i>	5	5. Module Tutor	Sarah Eunkyung Kim
6. Credit points <i>10, 20,30 etc</i>	10	7. Year long or semester based	Semester
8. Type of module <i>eg standard, dissertation, work-based study</i> <i>A full list of module types is provided in the guidelines¹.</i>	Standard		
9. Location(s) of delivery <i>For collaborative delivery, please state name(s) of institution(s) with country and start month(s) for each. A full list is available on the SITS help file in eLP</i>	Seoul Tech, South Korea, March		

MODULE DESCRIPTIONS

10. Synopsis of module (SITS Module Descriptor Sequence 0001)
A brief overview of aims, learning outcomes, learning, teaching, assessment, & feedback methods, and rationale

This module provides a basic introduction to the structure and properties of engineering materials and their significance to engineering applications and design.
This course will help students to use materials properly and realize new design opportunities with materials.
Assessment is made through an exam at the mid-point, a final exam and a report based on a directed research topic

11. Indicative reading list or other learning resources (SITS 0002)

1. Recommendations for purchase by students

N/A

2. Books

Materials Science and Engineering: An Introduction (W.D. Callister, Jr., 7th

¹ <http://northumbria.ac.uk/sd/central/ar/qualitysupport/approval/forms/>

² <http://northumbria.ac.uk/sd/central/library/marcel/redguides/browse/?view=Standard>

edition, John Wiley and Sons, Inc)

3. Journal Articles

N/A

4. Journals and Newspaper Titles

N/A

5. Databases and Websites

N/A

6. Any Other Resources

S. E. Kim, Course note on "Introduction to Materials Science and Engineering", Seoul Tech.

12. Outline syllabus (SITS 0003)

A list of module contents

- Atomic Structure and Bonding
- Crystal Structure and Crystal Defects
- Diffusion in Solids
- Mechanical Properties
- Electrical Properties
- Phase diagram
- Materials Selection and Design

13. Aims of module (SITS 0004)

Broad statement of educational intent and overall purpose of module

This module aims to introduce the students to the basic properties of materials, how to select materials for a given application and design concepts of materials. The students will obtain a general overview of material structure and properties and will foster the ability to apply these processes and design knowledge to other practical areas.

14. Learning outcomes (SITS 0005)

State what expected to know and/or be able to do at end of module

- Upon completion of the module students will be able to:
1. Understand the characteristics of engineering materials and how to select them for cost effective performance.(A3)
 2. Apply the principles of design and techniques to develop products and related manufacturing processes.(A5)
 3. Define problems and identify the key issues/parameters affecting their solution. (B1)
 4. Select and apply scientific principles to model Manufacturing processes.(B2)
 5. Apply an engineering approach to the solution of problems using scientific principles.(D2)

15. Pre-requisite(s) (SITS 0006)

Any module which must already have been taken at a lower level, or any stipulated level of prior knowledge required

None

16. Co-requisite(s) (SITS 0007)

Modules at this level which must be taken with this module

None

17. Distance learning delivery (SITS 0008)

*If the module is offered (wholly or in part) by distance learning, please give detail of delivery arrangements and the specific resources required
e.g. materials, communication facilities, hardware, software etc.*

None

18. Learning and teaching strategy (SITS Module Descriptor Sequence 0009)

The module consists of lectures, 2 exams, and a report. The lectures provide the students with the general knowledge of materials' structures and properties. The focus of the module is directed towards learning, understanding and application. Time will be made available during lectures to answer student questions arising from any directed learning or material taught during the lecture. The report is set to study an application of material design and to exercise engineering journal reading and technical report writing. The two exams will be given to the students to test the lecture materials and basic understanding of material properties.

19. Assessment and feedback strategy (SITS Module Descriptor Sequence 0010)

Please provide details of assessment (formative and summative) and indicate how students will be provided with feedback on their performance. (A breakdown of summative tasks is also provided in section 23.) If the module or an assessment component is exempt from the Anonymous Marking Policy please indicate this below.

a. Summative assessment and rationale for tasks

Two exams worth 80% (40% per exam) are set to provide the students with a range of problems to solve and test their individual ability to logically analyse a problem and develop a solution. A report worth 20% is set to provide the students how to get information on a topic given, how to summarize engineering information searched, and how to communicate the content in written format.

b. Additional formative assessment – detail of process and rationale
Formative assessment will take place in the lectures.

c. Indication of how students will get feedback and how this will support their learning

Written feedback will be provided on the report. Examination feedback will be provided on the exam answer sheet and exam questions will be reviewed during the class after the exam.

20. Implications for Choice (SITS Module Descriptor Sequence 0011)

Possible follow-on modules, or exclusions, or modules which require this one as a pre-requisite

None

21. Notional Student Workload (NSW) for each mode of delivery
(SITS Module Descriptor Sequence 0012)

Complete a separate table where the distribution of NSW differs for a particular delivery pattern - Mode of Delivery FT□

Activity type*	Hours	KIS category	KIS category hours
Lecture	50	Scheduled	
Seminar	10		
Tutorial			
Project Supervision			
Demonstration			
Practical classes and workshops			
Supervised time in studio/ workshop			
Fieldwork			
External visits			
Work based learning			
Guided independent study	40	Independent	
Placement		Placement	
Year abroad			
Total workload <i>200 hours for 20 credit module, 100 for 10 credit module etc.)</i>	100		

SUMMATIVE ASSESSMENT

22. Form of Reassessment

Either synoptic or non-synoptic reassessment

	Y/N
Synoptic reassessment <i>One form of reassessment that tests all module learning outcomes</i>	Y
Non-synoptic reassessment <i>Where module referred overall, individual failed components of assessment are reassessed</i>	

23. Component Assessment

To be completed for each component of assessment

Sequence <i>001, 002 etc.</i>	Activity type ³ <i>indicate ONE of the following types: AO Attendance only CP Clinical Placement CW Coursework EXAM PRE Presentation</i>	Brief description of assessment <i>e.g. type/ length of exam, type/ word limit of coursework</i>	Weighting <i>% or Pass/Fail (for grade only components) Note: % weightings should add up to 100% for module overall</i>	Final assessment Y/N
001	EXAM	Mid-Term Exam (1hr 30min)	40	
002	EXAM	Final Exam (1hr 30min)	40	Y
003	CW	Report (4 pages)	20	

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24. Date of SLE Approval

³ For KIS reporting, CP and PRE will be aggregated together as 'Practical' assessment types

25. Subject code
 This ensures that the correct area receives appropriate funding and should be completed in consultation with the School Registrar or nominee. Advice can also be sought from Financial Planning.

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26. Module mark scheme assigned⁴

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27.	Component mark scheme assigned³		
	<ul style="list-style-type: none"> • For each component listed in section 23 indicate the mark scheme attached. • Note that for synoptic mark schemes (ie MOD1, MOD3 and M50SY only) an additional component should be entered for the reassessment with sequence 900 and assessment type SYN. 		
	001		

28.	Date of entry onto SITS	
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29.	LOG OF CHANGES POST APPROVAL			
	<i>Please indicate any changes to the approved module descriptor from 2012/13 onwards</i>			
	Section No.	Brief description of change	Date of approval	Semester and year of first implementation

³A list of marking schemes (module and component) can be accessed from <http://northumbria.ac.uk/sd/central/ar/qualitysupport/approval/forms/>