

MODULE SPECIFICATION FORM

Module Title: Topics in Nanotechnology	Level: 6	Credit Value: 20
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Module code: SCI615	Cost Centre: GAFS	JACS3 code: F100
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Trimester(s) in which to be offered: 2	With effect from: Sept 2014
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Office use only: To be completed by AQSU:	Date approved: July 2014 Date revised: - Version no: 1
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Existing/New: New	Title of module being replaced (if any):
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Originating Academic Department: Chemistry	Module Leader: Dr Jixin Yang
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Module duration (total hours): 200 Scheduled learning & teaching hours: 50 Independent study hours: 150	Status: core/option/elective Core (identify programme where appropriate):
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Programme(s) in which to be offered: BSc (Hons) Chemistry with Green Nanotechnology	Pre-requisites per programme (between levels): None
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Module Aims:

This module aims to expand students' knowledge in materials chemistry and develop an understanding of topics at the forefront of research on nanoscale materials including nanocrystals, colloids, properties of soft matter and surface characterisation techniques *etc.* The module will also provide an in-depth training in literature search and review.

Intended Learning Outcomes:

At the end of this module, students will be able to ...

1. Demonstrate an in-depth understanding of synthesis, properties and characterisation of various nanomaterials. (KS5)
2. Select and critically evaluate the state-of-the-art research topics in nanotechnology. (KS5, KS6)
3. Develop skills in information synthesis, scientific presentation and graphical interpretation in nanotechnology field. (KS1, KS4, KS5, KS9)

Key skills for employability

1. Written, oral and media communication skills
2. Leadership, team working and networking skills
3. Opportunity, creativity and problem solving skills
4. Information technology skills and digital literacy
5. Information management skills
6. Research skills
7. Intercultural and sustainability skills
8. Career management skills
9. Learning to learn (managing personal and professional development, self management)
10. Numeracy

Assessment:

Assessment 1: Research essay (50%)

The students are expected to perform in-depth literature search and use a few case studies to comment on the development in one particular area of nanotechnology.

Assessment 2: Poster presentation (20 min, 50%)

The students will perform in-depth literature search and present a case study about one particular research work or one particular field in nanotechnology.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting	Duration (if exam)	Word count (or equivalent if appropriate)
1	1-2	Essay	50%		2000
2	3	Poster Presentation	50%	20 min	1500

Learning and Teaching Strategies:

Researchers / lecturers from within the programme team and external speakers will deliver lectures highlighting specific topics within the field. Students will be encouraged to engage with appropriate peer reviewed literature through directed study, which will be reinforced by student seminars.

Syllabus outline:

Advanced nanomaterials (inorganic and organic)
Synthesis, properties and characterisation of nanomaterials
Food nanotechnology and nanomedicine
Carbon fullerenes and nanotubes
Enterprise in nanotechnology, including case studies of nanotechnology start-up companies.
Nanotechnology for defence and security applications
Ethical issues in nanotechnology
Case studies in the application of nanotechnology in other areas

Bibliography:

Essential reading:

J. Ramsden (2011) *Nanotechnology: An Introduction*, Elsevier Inc.

J. Ramsden (2009) *Applied Nanotechnology*, Elsevier Inc.

Other indicative reading (academic journals):

Nano Today

Nano Energy

Journal of Nanomaterials

Nanoscale Research Letters

Nano Communication Networks

Nanomedicine: Nanotechnology, Biology and Medicine

Photonics and Nanostructures - Fundamentals and Applications