

Module specification

When printed this becomes an uncontrolled document. Please access the **Module Directory** for the most up to date version by clicking on the following link: [Module directory](#)

Module code	SCI640
Module title	Nanomedicine and Biochemistry Futures
Level	6
Credit value	20
Faculty	FAST
Module Leader	Dr Jixin Yang
HECoS Code	100344
Cost Code	GAFS

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BSc (Hons) Biochemistry	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	24 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	24 hrs
Placement / work based learning	0 hrs
Guided independent study	176 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	14/10/2020
With effect from date	01/09/2023
Date and details of revision	
Version number	1

Module aims

This module will enable students to look into the exciting and emerging discipline of nanomedicine and other frontline research and applications of biochemistry, including diagnostics, therapeutics, biosensors and nanotechnologies for regenerative medicine and tissue engineering. The focus will be on the impact of advance in science and technology to the human's life. The module will also provide an in-depth training in literature search and review.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Demonstrate an in-depth understanding of nanomedicine and other advanced biochemical fields.
2	Critically evaluate the advantages and limitations of biochemical and biomedical applications of nanomaterials.
3	Comment on the future perspectives of nanoscience and technology in the relevant areas.
4	Develop skills in information synthesis, scientific presentation and graphical interpretation in nanomedicine and advanced biochemical science.

Assessment

Indicative Assessment Tasks:

Assessment: Research essay (3000 words, 100%)

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 nanomedicine or other biochemical science.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1-4	Essay	100%

Derogations

N/A

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.

Indicative Syllabus Outline

- Introduction to nanotechnologies for medicine
- Nanoparticles in medicine
- Recent developments in the safety of nanomaterials
- Scaffolds and nanocomposites for tissue engineering
- Nanoparticles for medical imaging
- Engineered nanoparticles for cancer diagnostics and therapy
- Nano-biosensors
- Nanotechnologies and nanoparticles for drug delivery
- Advance and future perspectives in biochemical science

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

Howard, K.A., Vorup-Jensen, T. and Peer, D. (2016). *Nanomedicine*. New York: Springer.

Trimm, H.H. and Hunter Jr., W. (2016). *Recent Advances in Biochemistry*. Oakville: Apple Academic Press.

Other indicative reading

Academic journals:

Nano Today (Elsevier)

Journal of Nanomaterials (Open access)

Nanomedicine: Nanotechnology, Biology and Medicine (Elsevier)

Journal of Nanobiotechnology (Open access)

Archives of Nanomedicine ()

Journal of Interdisciplinary Nanomedicine (Open access)

Nanomedicine (Open access)

The Open Nanomedicine and Nanotechnology Journal (Open access)

Biochemistry & Physiology (Open access)

Advances in Biochemistry and Biotechnology (Open access)

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas. [Click here to read more about the Glyndwr Graduate attributes](#)

Core Attributes

Engaged
Creative
Enterprising
Ethical

Key Attitudes

Commitment
Curiosity
Resilience
Confidence
Adaptability

Practical Skillsets

Digital Fluency
Organisation
Leadership and Team working
Critical Thinking
Emotional Intelligence
Communication