

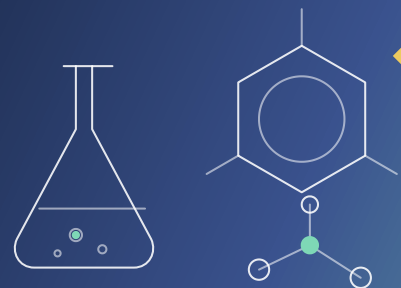
Module code

SEC-2403

Type of module

Undergraduate: Chemistry – Elective

Biomarkers, Diseases and Diagnostics



Modular credits

4

Total student
engagement

56 hours

Prerequisite

None

Anti-requisite

None

Aims

To develop a comprehensive understanding of disease diagnostics, emphasising the role of biomarkers and diagnostic technologies in the detection, monitoring, and management of communicable and non-communicable diseases, with a focus on personalised medicine, sustainability, and global health impact.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse and illustrate the significance of protein and non-protein biomarkers in the diagnosis of communicable and non-communicable diseases.

MLO 2

Evaluate and compare nucleic acid and immuno-based diagnostic technologies in terms of underlying principles, advantages, and limitations.

MLO 3

Examine and interpret the development and application of personalised diagnostics, including biosensors, smartphone-enabled tools, and wearable devices.

MLO 4

Critically evaluate real-world case studies where biomarkers and diagnostic technologies have influenced disease detection, monitoring and treatment decisions.

Module contents

Principles of diagnostics and biomarkers in healthcare.	Communicable vs non-communicable diseases with Brunei context.	Biomarker types, functions, and sample sources.
In vivo diagnostics: skin tests, ECG, imaging techniques, and endoscopy.	In vitro diagnostics: nucleic acid tests and immunodiagnostics.	Diagnostic applications in infectious, cancer, cardiovascular, and neurodegenerative diseases.
Point-of-care and biosensor technologies.	Personalised and precision diagnostics using multi-omics.	Sustainability, AI-driven tools, and ethical issues in diagnostics.

Assessment

60% **40%**
Examination Coursework



■ Examination — 60% ■ Essays — 20% ■ Class test — 10% ■ Poster Presentation — 10%

Formative assessment

Weekly discussions and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	30%
Essays	20%
Class test	10%
Group	10%
Poster Presentation	10%

Graduate attributes and skills

University learning objectives (PLO) addressed

B Balanced & holistic individuals	E Ethical leaders	S Sustainable thinkers	T Transdisciplinary practitioners	A Adaptable & resilient lifelong learners	R Responsible global citizens	I Innovative problem-solvers
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B, S, T

Sustainability concept addressed

3	SDG 3 Good Health and Well-Being
4	SDG 4 Quality Education
9	SDG 9 Industry, Innovation and Infrastructure

Digital skills/software used (not limited to)

- Word processing software (e.g. Microsoft Word)
- Image processing and presentation tools (e.g. Canva, Microsoft PowerPoint)

Micro-credentialling option No	Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes No
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Document details

Office **ODVCE** Document date **27 June 2026** Status **New** Approval **GBF (12/02/2026)**