STUDENT AND ACADEMIC SERVICES

UWE Bristol | University of the West of England

MODULE SPECIFICATION

Part 1: Information			
Module Title	Smart Sensing		
Module Code	USSJLH-15-M	Level	Level 7
For implementation from	2021-22		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Health & Applied Sciences	Field	Applied Sciences
Department	HAS Dept of Applied Sciences		
Module Type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co-requisites	None		
Module Entry Requirements	None		
PSRB Requirements	None		

Part 2: Description

Overview: This module will build on the compulsory module, "Innovation for healthcare", which will allow advanced understanding of these devices. A key topic series in this module will be the introduction of innovative technologies such as implantable and wearable sensors. The module will be delivered through a series of lecture, tutorial and practical classes. By the end of the module the students will be able to design (bio)sensor systems for given healthcare applications. The students will also be introduced to innovative technology, potentially providing the platform for their independent development of a new biosensor.

Educational Aims: The aim of this module is to provide a detailed overview of current sensors and biosensors important to the Healthcare sector.

Outline Syllabus: •   Introduction to Biosensors and biomarkers.
•   Biomolecular recognition themes.
•   Sample collection and preparation.
•   Conventional and nanotechnology-based transduction schemes.

•	Physical and physiological sensors.
•	Data analysis and performance factors.

Teaching and Learning Methods: Lectures: This module will be delivered in integrated lectures, that detail innovative technologies such as implantable and wearable sensors.

Tutorials: Tutorial classes will support each relevant lecture or practical class.

Practical classes: Several classes will be included that are linked to the lecture series offering the students an applied understanding of each topic section.

Part 3: Assessment

There are two pieces of assessment an examination (Component A) and a practical report (Component B).

COMPONENT A: The first piece of assessment will consist of an examination (2 hours) which will test knowledge and critical understanding of core concepts delivered during lectures and tutorial classes. Formative assessment support will be provided for the students prior to examinations, where students can send sample exam answers for formative feedback. Other formative feedback opportunities are available through the tutorial sessions.

COMPONENT B: The coursework is designed to develop understanding of how to report on a practical experimental exercise (1500 words). The write up of the lab practical class will test their attention to detail, ability to write clearly and concisely and also evidence competence in laboratory skills.

First Sit Components	Final Assessment	Element weighting	Description
Examination - Component A	✓	50 %	Examination (2 hours).
Laboratory Report - Component B		50 %	Practical Report (1500 Words).
Resit Components	Final Assessment	Element weighting	Description
Examination - Component A	✓	50 %	Examination (2 hours)
Laboratory Report - Component B		50 %	Practical report (1500 words)

Part 4: Teaching and Learning Methods	
Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:

Module Learning Outcomes	Reference
Synthesise state of the art sensors and biosensors important to the Healthcare sector (Component A and B).	MO1
Critically evaluate the key elements of a biosensor system from sample collection to output to the user (Component A).	MO2
Critically evaluate how innovative technologies such as implantable and wearable sensors can make an impact on future healthcare (Component A).	MO3
Critically review the different types of sensor technologies and their applications, and to apply this knowledge to the practical design and characterisation of a (bio)sensor for a given diagnostic application (Component A and B).	MO4

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Contact Hours	**Independent Study Hours:**	
	Independent study/self-guided study	114
	Total Independent Study Hours:	114
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	36
	Total Scheduled Learning and Teaching Hours:	36
	Hours to be allocated	150
	Allocated Hours	150
Reading List	*The reading list for this module can be accessed via the following link:* https://rl.talis.com/3/uwe/lists/77C368F1-FA69-93ED-0709-0EA864807CC0.html	

Part 5: Contributes Towards
This module contributes towards the following programmes of study: Health Technology [Sep][PT][Frenchay][2yrs] MSc 2020-21