

Basic details

UID	<input type="text"/>	Cohorts covered	Earliest cohort <input type="text" value="2024-25"/>	Latest cohort <input type="text"/>
Long title	<input type="text" value="Biomedical imaging"/>			
New code	<input type="text" value="PHYS70031"/>	New short title	<input type="text" value="Biomedical imaging"/>	
Brief description of module <i>(approx. 600 chars.)</i>	<input type="text" value="An introduction to principles and practice of biomedical imaging technologies, including microscopes, fluorescence and tomography. The module will provide an understanding of the challenges presented by tissue samples, in vivo and ex vivo systems. You will be equipped with sufficient knowledge to be able to use and understand a biomedical imaging system in subsequent research or industry settings and will gain knowledge of latest research frontiers."/>			
	454 characters			
Available as a standalone module/ short course?	<input type="text" value="N"/>			

Statutory details

	ECTS	CATS	Non-credit	HECOS codes
Credit value	<input type="text" value="5"/>	<input type="text" value="10"/>	<input type="text" value="N"/>	<input type="text"/>
FHEQ level	<input type="text" value="Level 7"/>			
				<input type="text"/>
				<input type="text"/>

Allocation of study hours

	Hours	
Lectures	<input type="text" value="12"/>	
Group teaching	<input type="text" value="6"/>	<i>Incl. seminars, tutorials, problem classes.</i>
Lab/ practical	<input type="text"/>	
Other scheduled	<input type="text" value="10"/>	<i>Incl. project supervision, fieldwork, external visits.</i>
Independent study	<input type="text" value="97"/>	<i>Incl. wider reading/ practice, follow-up work, completion of assessments, revisions.</i>
Placement	<input type="text"/>	<i>Incl. work-based learning and study that occurs overseas.</i>
Total hours	<input type="text" value="125"/>	
ECTS ratio	<input type="text" value="25.00"/>	

Project/placement activity

Is placement activity allowed?

Module delivery

Delivery mode	<input type="text" value="Taught/ Campus"/>	Other	<input type="text"/>
Delivery term	<input type="text" value="Term 2"/>	Other	<input type="text"/>

Ownership

Primary department

Additional teaching departments

Delivery campus

Collaborative delivery

Collaborative delivery?

External institution	N/A
External department	N/A
External campus	N/A

Associated staff

Role	CID	Given name	Surname
Module Leader		Mary	Matthews

Learning and teaching

Module description

Learning outcomes	<p>On completion of the module you will be able to:</p> <ul style="list-style-type: none"> -demonstrate awareness of the key techniques in imaging biological samples, and select and apply appropriate mathematical methods to the analysis of the technique, - critically analyse key and current problems/ frontiers in biomedical imaging, - design from first principles a biomedical imaging system, analyse its performance and assess its relative merits, - analyse complex biomedical imaging systems using appropriate mathematical descriptions, - describe the detail, and assess the performance characteristics and relative merits, of advanced, state-of-the-art biomedical imaging techniques.
Module content	<ul style="list-style-type: none"> • The mechanisms for creating contrast for imaging • The principles of microscopy • Properties of tissue and challenges for imaging in a biological content • Design consideration and elements of a biomedical imaging system • Using fluorescence as contrast, techniques and research examples • Using phase as contrast, techniques and research examples • Computational techniques for superresolution • Advanced techniques for biomedical imaging
Learning and Teaching Approach	<p>Students to be taught over one term using a combination of 12 lectures to deliver the content. This will include some time for worked examples.-A further 6 classworks will allow students to prepare for and present short reviews of key research papers in the field.</p>
Assessment Strategy	<p>80% summative assessment based on a 1.5 hour final written exam that will evaluate competences across the learning outcomes, 20% summative assessment will come from a 10-minute in-class journal presentation in teams (oral) with questions.</p>
Feedback	<p>Problem sheets are provided and model solutions are provided. An office hour is provided each week during the module to allow for feedback and direct interaction between students and the module lecturers. Classworks provide an opportunity for group discussion and for students to receive feedback on the presentation.</p> <p>Rapid feedback is provided via online quizzes. Students can hand in their answers to problem sheet questions which will be reviewed and annotated (no formal mark) for formative feedback.</p>
Reading list	<p>Lecture notes are provided to students as well as a list of 20-30 key papers in the field of bio-imaging. The notes are designed to be self-contained, and there is no designated textbook required for this module. There are however also some excellent textbooks, that will be suggested as supplementary or complementary reading for those wishing to explore further some aspects of the module.</p>

Quality assurance

Date of first approval
Date of last revision
Date of this approval

Module leader

Notes/ comments

Office use only

QA Lead
Department staff
Date of collection

Date exported
Date imported