Imperial College London

Module Specification (Curriculum Review)

Basic details					
		1	O a la anta la avvana d	Earliest cohort	Latest cohort
UID			Conorts covered	20223-24	
L	Information Theorem				
Long title	Information Theory				
		7000/			
New code	PHYS	70004	New short title		
Brief description of module (approx. 600 chars.) This module will cover the fundamentals of modern information theory, starting includes both source and channel coding, Shannon's theorems, and the mitigation both continuous and digital signals.					y with the laws of information. This ation of noise for 324 characters
Available a	as a standalone mod	ule/ short course?	Y	1	524 Gilaracters
				-	
Statutory details	FCTS	CATS	Non-credit		
Credit value	5	10	N	HECOS codes	
]	
		1			
FHEQ level	Level /				
Allocation of study I	NOURS Hours				
Lectures	15				
Group teaching	0	Incl. seminars, tuto	rials, problem classes).	
Lab/ practical	0				
Other scheduled	10	Incl. project superv	ision, fieldwork, exter	nal visits.	
Independent study	100	Incl. wider reading/	practice, follow-up we	ork, completion of ass	essments, revisions.
Placement	0	Incl. work-based lea	arning and study that	occurs overseas.	
Total hours	125				
ECTS ratio	25.00				
Project/placement a	activity				
Is placement ac	ctivity allowed?	No]		
Module delivery					
Deliverv mode	Taught/ Campus	Other			
Delivery term		Other	Term 1, exam in te	rm 3	
Ownership					
Primary department	Physics				
Additional teaching					
departments					

Collaborative delivery

	Collaborative delivery	?	N
External institution	N/A		
External department External campus	N/A		
	N/A		
-	T		

Associated staff

Role	CID	Given name	Surname
Module Leader		Andrew	Jaffe

Learning and teaching Module description

Learning outcomes	Students who complete this module should be able to: know the laws of probability; use them to solve inference problems; identify and quantify the information gain in a given context; use entropy and related concepts to assess an information storage or transmission system; apply and assess source and channel coding methods; calculate the effects of noise on information transmission and storage.
Module content	The module will cover: the laws of probability; the definition and quantification of information; information entropy; source coding and data compression; channel coding and error detection/correction; use of analogue signals to transmit digital information; effect of noise on information gain.
Learning and Teaching Approach	The module content will primarily be delivered in lecture sessions. There will be some inverted learning, with the contact hours used to work through questions from the problem sheets.
Assessment Strategy	The assessment will be primarily by written exam in order to assess how well the students know the fundamentals of this topic. There will be a short mid-course assignment that makes up 10% of the module mark.
Feedback	The mid-course assignment will be the primary means of giving formative feedback to the students; this will include full comments, along with a provisional mark.
Reading list	 Information Theory, Inference and Learning Algorithms, MacKay, D.J.C., 2004, Cambridge University Press Information and Measurement, Lesurf, J.G.C., 2002, Institute of Physics Information and Communication for Engineers, Usher, M.J. & Guy, C.G., 1997, Macmillan

Quality assurance

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



Office use only

QA Lead Department staff Date of collection

Module leader	Andrew Jaffe	Date exported Date imported	
Notes/ comments			

Template version 16/06/2017

Programme structure Associated modules

UID	Legacy code	Module title	Requisite type

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Assessment details

Grading method Numeric

Pass mark 50%

Assessments

Assessment type	Assessment description	Weighting	Pass mark	Must pass?
Examination	One-hour written examination	90%	50%	N
Coursework	Short mid-course assignment	10%	50%	N
	•	100%		