

Information Theory

Module Code	PHYS97032	FHEQ Level	Level 7
Pre-requisites	None	Co-requisites	None
Primary Department	Physics		
Module Leader	Dr Daniel Mortlock		
Additional Teaching Departments	None		
Teaching Staff	Dr Daniel Mortlock (lecturer)		
Programmes on which the Module is delivered			Core/Elective
All UG Physics programmes (F300, F303, F309, F325, F390, F3W3)			Elective
Learning Outcomes	<p>Students who complete this module should be able to:</p> <ul style="list-style-type: none"> • Identify and quantify information in a given situation. • Quantify the bit-rate requirement of digital signalling • Transform signals into forms suitable for transmission. • Know how data can be coded, compressed and encrypted, and why. • Calculate the effects of different physical noise sources. 		
Description of Content	<p>The module will cover:</p> <ul style="list-style-type: none"> • Laws of probability • Definition and quantification of information • Conditional entropy as a measure of information gain • Effect of noise on information gain • Noise and bit error rate (BER) • Source coding • Data compression • Channel coding • Use of analogue signals to transmit digital information 		
Assessment		Assessment Type	Weighting
Written Exam		Exam	100%
Learning & Teaching Hours	Independent Study Hours	Placement Hours	Total Hours
23.5	51.5	0	75
ECTS Credit	3	CATS Credit	6
Date of introduction	October 2016	Date of Last Revision	25/4/2020