Title of Project	Division	1 st Supervisor	Exp	Th	Com	Offered	Student	Notes
						This Yr		
Measurement of the quality of the laser focus in a	Biophotonics	Gail McConnell	70%	10%	20%	?		
scanning optical microscope								
Photonic materials and devices for Visible Light	IoP	Benoit Guilhabert	50%	20%	30%	5th	Mark Carmichael	
Communication (VLC)								
Neurophotonic systems for interfacing with the retina	IoP	Keith Mathieson	40%	10%	50%	?		
Modelling non-linear processes in micro-waveguides	IoP	Michael Strain	0%	50%	50%	4th		New for 2015-16
Receiving Information from Smart Illumination	IoP	Johannes Herrnsdorf	30%	30%	40%	4th		New for 2015-16
Remote sensing of subsea light fields	Nanoscience	Alex Cunningham	0%	50%	50%	No		
Characterisation of irregular particles by optical	Nanoscience	Alex Cunningham	25%	25%	50%	No		
microscopy and digital imaging								
Differential polarisation imaging for environmental	Nanoscience	Alex Cunningham	33%	33%	34%	No		
applications								
Optical modes and multiple scattering	Nanoscience	Ben Hourahine	0%	50%	50%	5th	David Newton	
Twisted nanostructures	Nanoscience	Ben Hourahine	0%	30%	70%	?		
Optical forces on nanoparticles	Nanoscience	Ben Hourahine	0%	60%	40%	?		
Statistical analysis of defect distributions in	Nanoscience	Carol Trager-Cowan	10%	40%	50%	5th	Ross Johnston	Not reoffered
semiconductor thin films								
Image processing of electron channelling contrast	Nanoscience	Carol Trager-Cowan	10%	30%	60%	No		Withdrawn
patterns and electron channelling contrast images								
Doping profile measurements in silicon p-n junctions via	Nanoscience	Carol Trager-Cowan	70%	20%	10%	4th		New for 2015-16, can be split into 2
capacitance-voltage measurements								
Optical spectroscopy of distant sources	Nanoscience	Carol Trager-Cowan	70%	10%	20%	4th		New for 2015-16, can be split into 2
Surface fluorescence	Nanoscience	David Birch	70%	20%	10%	!		Uncertain
Nanoparticle metrology	Nanoscience	David Birch	60%	20%	20%	!		Uncertain
Tele-spectroscopy	Nanoscience	David McKee	70%	10%	20%	?		
Time series analysis of ocean colour remote sensing data	Nanoscience	David McKee	0%	20%	80%	?		
from the North Sea								
Spectroscopic Studies of Pheomelanin: Spectra, Kinetics,	Nanoscience	Jens Sutter	65%	25%	10%	No		Replaced
Modulators								
Spectroscopic Studies of Melanin Fibrils: Spectra,	Nanoscience	Jens Sutter	65%	25%	10%	4th		New for 2015-16
Kinetics, Modulators								
Luminescence Hysteresis	Nanoscience	Kevin O'Donnell	50%	10%	40%	No		Replaced
Eu-doped GaN	Nanoscience	Kevin O'Donnell	60%	15%	25%	4th		

Phosphorescence of glowstones	Nanoscience	Kevin O'Donnell	60%	10%	30%	4th		New for 2015-16
Hysteretic Photochromic Switching (HPS) of europium-	Nanoscience	Kevin O'Donnell	60%	10%	30%	4th		New for 2015-16
magnesium (Eu-Mg) defects in GaN								
Predicting Solvation Thermodynamics of Bioactive	Nanoscience	Maxim Fedorov	0%	30%	70%	?		
Molecules								
Molecular Mechanisms of Biological Adaptation to	Nanoscience	Maxim Fedorov	50%	10%	40%	?		
Extreme Ionic Environments								
Ionic liquids at charged interfaces: applications for	Nanoscience	Maxim Fedorov	0%	50%	50%	?		
electrochemical energy storage								
Development of molecular-scale computer models for	Nanoscience	Maxim Fedorov	0%	50%	50%	?		
enhanced oil recovery								
Modelling of wettability of mineral surface by water and	Nanoscience	Maxim Fedorov	0%	50%	50%	?		
oil								
Effects of salts on surfactant solutions	Nanoscience	Maxim Fedorov	0%	50%	50%	?		
Predicting small molecule binding sites on protein	Nanoscience	Maxim Fedorov	70%	10%	20%	?		
surfaces								
Uncovering the early stages of protein folding	Nanoscience	Neil Hunt	75%	10%	15%	5th	Andrew Farrell	
Uncovering the early stages of protein folding	Nanoscience	Neil Hunt	75%	10%	15%	4th		Reoffering
A Physical Investigation of Protein-drug Binding	Nanoscience	Neil Hunt	75%	15%	10%	5th	Elaine Adair	
A Physical Investigation of Protein-drug Binding	Nanoscience	Neil Hunt	75%	15%	10%	4th		Reoffering
The Physics of DNA	Nanoscience	Neil Hunt	75%	15%	10%	?		
Thermal modelling of a gravitational ribbon-sensor	Nanoscience	Nick Lockerbie	30%	30%	40%	?		
Gravitational ribbon-sensor modelling.	Nanoscience	Nick Lockerbie	30%	30%	40%	?		
Testing for gravitational coupling to Entropy.	Nanoscience	Nick Lockerbie	50%	50%	0%	?		
Intrinsic Fluorophores in Sensing Applications	Nanoscience	Olaf Rolinski	80%	10%	10%	!		Uncertain
Unusual fluorescence decays	Nanoscience	Olaf Rolinski	30%	10%	60%	ļ.		Uncertain
Modelling semiconductor nanostructures using a	Nanoscience	Paul Edwards	0%	20%	80%	No		Replaced
Schrödinger-Poisson-current solver								
Metal foils for electron energy filtering	Nanoscience	Paul Edwards	20%	10%	70%	4th		New for 2015-16
Noise and system response of CCD spectrographs for	Nanoscience	Paul Edwards	50%	25%	25%	4th		Renewed
luminescence spectroscopy								
Effects of electron irradiation on photoluminescence	Nanoscience	Rob Martin	60%	20%	20%	?		
spectra of thin film Cu(InGa)Se2								
Electroluminescence spectroscopy and electrical	Nanoscience	Rob Martin	70%	0%	30%	?		
characterisation of light-emitting diodes								

Laser Selective Excitation Studies of Nd3+ doped mixed garnets	Nanoscience	Tom Han	85%	10%	5%	5th	Stacey Mitchell	
Stimulated Raman spectroscopy (SRS) of Organic liquids	Nanoscience	Tom Han	85%	10%	5%	?		
Spectrocopic Studies of Rare-earth ions doped in LiNbO3	Nanoscience	Tom Han	85%	10%	5%	?		
Optical Second Harmonic Generation in Urea	Nanoscience	Tom Han	85%	10%	5%	?		
Noble Metal Quantum Dots	Nanoscience	Yu Chen	95%	5%	0%	5th	Callum Runciman	
Noble Metal Quantum Dots	Nanoscience	Yu Chen	95%	5%	0%	4th		Reoffering
Optical Properties of Nanoparticles	Nanoscience	Yu Chen	80%	10%	10%	ļ		Uncertain
Observing beam propagation by fluorescence (b)	Optics	Aidan Arnold	70%	20%	10%	?		
Observing beam propagation by fluorescence	Optics	Aidan Arnold	70%	20%	10%	?		
Hybrid Quantum Systems	Optics	Jonanthan Pritchard	0%	50%	50%	4th		New for 2015-16
Chirp management of LEDs (experimental and	Optics	Nigel Langford	75%	0%	25%	5th	Gregor McDowall	
computational)								
Non-resonant optical cavities	Optics	Nigel Langford	20%	0%	80%	?		
Control of Quantum Cascade chirped laser pulses via dispersion management (BSc) Computational and Experimental	Optics	Nigel Langford	20%	0%	80%	?		
Optical pumping of molecular gas lasers by QC Lasers (computational)	Optics	Nigel Langford	20%	0%	80%	?		
Thermal management of pulsed QC Lasers (computational)	Optics	Nigel Langford	0%	0%	100%	?		
Single-shot, 3D reconstruction of the spatial profile of a laser beam	Optics	Paul Griffin	60%	20%	20%	5th	Matteo Demelas	
Automated optimisation of optical fibre coupling using microprocessor control	Optics	Paul Griffin	80%	5%	15%	No		Deleted
Magnetic Field Stabilization with an Arduino Microprocessor	Optics	Stefan Kuhr	40%	10%	50%	5th	Nick Bruce	
Holographic Atom Traps	Optics	Stefan Kuhr	45%	10%	45%	?		
Beam quality of broad-area lasers	Optics	Thorsten Ackemann	70%	10%	20%	4th		Renewed
Spin and polarization properties of optically pumped vertical-cavity gain structures	Optics	Thorsten Ackemann	70%	15%	15%	4th		Renewed
Polarization and feedback dynamics of VCSELs	Optics	Thorsten Ackemann	75%	10%	15%	No		Withdrawn

Numerical Modelling and Design of a High Power	Plasmas	Alan Young	0%	40%	60%	ļ		Uncertain
Magnetron								
Stochastic particle heating of charged particles by plasma	Plasmas	Bengt Eliasson	0%	50%	50%	?		
waves								
Simulation of electromagnetic waves in magnetized	Plasmas	Bengt Eliasson	0%	30%	70%	?		
plasmas								
Beam-driven Plasma Wakefield Acceleration (PWFA)	Plasmas	Bernhard Hidding	40%	20%	40%	?		
MonteCarlo Simulation and cooling performance of the	Plasmas	David Speirs	0%	30%	70%	?		
MICE Step V laboratory experiment								
Laser Wakefield Acceleration and Betatron Gamma Ray	Plasmas	Dino Jaroszynski	0%	30%	70%	5th	Adam Ross	
Radiation								
Phase-contrast X-ray imaging using an X-ray source based	Plasmas	Dino Jaroszynski	60%	20%	20%	5th	Craig Murdoch	
on a laser-plasma accelerator								
Medical Radio-isotope Production using a Laser-Plasma	Plasmas	Dino Jaroszynski	25%	25%	50%	5th	Gemma King	
Wakefield Accelerator								
Medical Radio-isotope Production using a Laser-Plasma	Plasmas	Mark Wiggins	0%	20%	80%	4th		Reoffering
Wakefield Accelerator								
Radiation Reaction	Plasmas	Dino Jaroszynski	0%	70%	30%	!		Uncertain
Non-linear Optics in Plasma: Raman Amplification and	Plasmas	Dino Jaroszynski	0%	50%	50%	!		Uncertain
Frequency Mixing								
Electron Beam Transport and Diagnostics	Plasmas	Dino Jaroszynski	0%	50%	50%	ļ.		Uncertain
Capillary Discharge Waveguides for Laser-Plasma	Plasmas	Dino Jaroszynski	80%	10%	10%	!		Uncertain
Interactions								
Radiotherapy using Beams from Laser-plasma	Plasmas	Dino Jaroszynski	70%	10%	20%	!		Uncertain
Accelerators								
Radiation Reaction	Plasmas	Dino Jaroszynski	0%	70%	30%	!		Uncertain
Capillary Discharge Waveguides for Laser-Plasma	Plasmas	Dino Jaroszynski	80%	10%	10%	No		
Interactions								
Laser-Wakefield Plasma Accelerated electron	Plasmas	Dino Jaroszynski	15%	25%	60%	!		Uncertain
optimization for Very High Energy Electron (VHEE) cancer								
treatment								
Radiotherapy using Beams from Laser-plasma	Plasmas	Dino Jaroszynski	80%	10%	10%	!		Uncertain
Accelerators								
Design of a Brewster window for a W-band gyro-TWA	Plasmas	Liang Zhang	20%	30%	50%	?		
Excitation of Heavy Atomic Species for ITER	Plasmas	Nigel Badnell	0%	30%	70%	?		

Atomic Processes for Astrophysical Plasmas	Plasmas	Nigel Badnell	0%	30%	70%	?		
Design study on plasma optics	Plasmas	Paul McKenna	0%	20%	80%	5th	Jonathan Jarrett	
Modelling laser-driven plasma expansion and ion	Plasmas	Paul McKenna	0%	20%	80%	5th	Alan Brown	
acceleration dynamics								
Induced relativistic optical transparency in intense laser-	Plasmas	Paul McKenna	0%	20%	80%	No		Replaced
solid interactions								
High energy ion acceleration in intense laser-plasma	Plasmas	Paul McKenna	0%	20%	80%	No		Replaced
interactions								
Modelling of plasma instabilities relevant to laser-driven	Plasmas	Paul McKenna	0%	40%	60%	4th		New for 2015-16
ion acceleration								
Ion Acceleration in Relativistically Intense Laser- Solid	Plasmas	Paul McKenna	0%	20%	80%	4th		New for 2015-16
Interactions								
High-Power Microwave Sources	Plasmas	Phil MacInnes	0%	35%	65%	4th		Can be split into 2.
Design and measurement of a mode converter for a	Plasmas	Wenlong He	25%	25%	50%	?		
microwave amplifier								
Numerical simulation of laser interaction with dense	Plasmas	Zheng-Ming Sheng	0%	30%	70%	?		
magnetized plasma								
Theoretical and numerical studies of laser pulse	Plasmas	Zheng-Ming Sheng	0%	30%	70%	?		
compression in underdense plasma								
Nonlinear Propagation of Extreme Intense Laser Beams in	Plasmas	Zheng-Ming Sheng	0%	20%	80%	?		
Plasma								
Spiral Bandwidth Control in Optical Parametric Oscillators	Theory	Alison Yao	0%	30%	70%	5th	Samuel Anderson	
Orbital Angular Momentum in Vectorial Kerr Cavities	Theory	Alison Yao	0%	30%	70%	?		
Dynamics of impurity atom coupled to a quantum gas	Theory	Andrew Daley	0%	40%	60%	5th	Karen Wallace	
Dynamics of impurity atom coupled to a quantum gas	Theory	Andrew Daley	0%	40%	60%	4th		Reoffering
Transport dynamics of quantum gases in optical	Theory	Andrew Daley	0%	40%	60%	4th		
potentials								
Computational modelling of X-ray Free electron Lasers	Theory	Brian McNeil	0%	25%	75%	5th	Matthew Brown,	
							Scott Thomas	
Computational modelling of X-ray Free electron Lasers	Theory	Brian McNeil	0%	25%	75%	4th		Reoffering
Resonant Electron Beam-light Interactions	Theory	Brian McNeil	0%	50%	50%	5th	Martyn Hunter	
Resonant Electron Beam-light Interactions	Theory	Brian McNeil	0%	50%	50%	4th		Reoffering
The theory of X-ray Free electron Lasers	Theory	Brian McNeil	0%	80%	20%	?		
The scientific applications of X-ray Free Electron Lasers	Theory	Brian McNeil	20%	50%	30%	?		

Quantum measurement in the Jaynes-Cummings model	Theory	Daniel Oi	0%	50%	50%	4th		
Modelling CubeSat to Ground Quantum Communication	Theory	Daniel Oi	0%	50%	50%	4th		
Ancilla-driven quantum dynamics	Theory	Daniel Oi	0%	90%	10%	4th		
Surface Fields in Layered Nano Particles	Theory	Francesco Papoff	0%	40%	60%	?		
Resonances in clouds of cold atoms	Theory	Francesco Papoff	0%	50%	50%	?		
Fluctuations and Noise in Cold Atoms	Theory	Francesco Papoff	0%	50%	50%	?		
Interaction of Spatial Optical Solitons	Theory	Gian-Luca Oppo	10%	40%	50%	5th	James Denholm,	
							Philip Doyle	
Self-structuring and Optomechanics of Cold Atoms	Theory	Gian-Luca Oppo	10%	40%	50%	5th	Mathias Weisen	
Dynamics of Coupled Laser Systems	Theory	Gian-Luca Oppo	10%	40%	50%	?		
Simulations of Spin-Polarized Vertical-Cavity Surface-	Theory	Gian-Luca Oppo	10%	40%	50%	?		
Emitting Lasers								
BEC simulations	Theory	Gordon Robb	0%	50%	50%	5th	Steven Lennox	
Cold atom-light interactions	Theory	Gordon Robb	0%	30%	70%	?		
Interactive Physics Simulations (PwT project)	Theory	Gordon Robb	0%	20%	80%	?		
BEC-light interactions	Theory	Gordon Robb	0%	30%	70%	?		
Ghost imaging and the Klyshko approach	Theory	John Jeffers	0%	60%	40%	5th	Leon Chan	Not reoffered
State Comparison Amplification of Schrodinger Cats	Theory	John Jeffers	0%	60%	40%	1		Uncertain
Exotic quantum operations with light	Theory	John Jeffers	0%	75%	25%	1		Uncertain
Quantum Optical Computational Toolbox	Theory	John Jeffers	0%	30%	70%	!		Uncertain
Quantum Enhanced Imaging	Theory	John Jeffers	0%	50%	50%	4th		New for 2015-16
Quantum State Comparison Amplification Protocol	Theory	John Jeffers	0%	80%	20%	4th		New for 2015-16
Quantifying quantum steering via semidefinite	Theory	Marco Piani	0%	50%	50%	5th	Benjamin Ross	
programming								
ТВС	Theory	Marco Piani				4th		
TBC	Theory	Marco Piani				4th		