Confirmation that this version of the module specification has been approved by the School Learning and Teaching Committee:

……………11th March 2015…………………………………….

**MODULE SPECIFICATION**

1. Title of the module

*PH602 Physics Problem Solving*

1. School or partner institution which will be responsible for management of the module

*School of Physical Sciences*

1. Start date of the module

*Existing module, next running in 2015-16*

1. The number of students expected to take the module

*80*

1. Modules to be withdrawn on the introduction of this proposed module and consultation with other relevant Schools and Faculties regarding the withdrawal

*None.*

1. The level of the module (e.g. Certificate [C], Intermediate [I], Honours [H] or Postgraduate [M])

*H*

1. The number of credits and the ECTS value which the module represents

*15 (7.5 ECTS)*

1. Which term(s) the module is to be taught in (or other teaching pattern)

*Term 1*

1. Prerequisite and co-requisite modules

*None*

1. The programmes of study to which the module contributes

*Physics (BSc, BSc with Foundation Year, MPhys)*

*Physics with Astrophysics (BSc, MPhys)*

*This is not available as a wild module*

1. The intended subject specific learning outcomes
   1. *An ability to identify relevant principles and laws when dealing with physics problems, and to make approximations necessary to obtain solutions. (B1)*
   2. *An ability to solve problems in physics using appropriate mathematical tools. (B2)*
   3. *Competent use of appropriate C&IT packages/systems for the analysis of data and the retrieval of appropriate information for problem solving. (C1)*
   4. *An ability to present and interpret information graphically to solve problems. (C2)*
   5. *An ability to communicate scientific information about problem solving, in particular to produce clear and accurate scientific reports. (C3)*
   6. *An ability to make use of appropriate texts, research-based materials or other learning resources as part of managing their own learning. (C6)*
2. The intended generic learning outcomes
   1. *Problem-solving skills, in the context of both problems with well-defined solutions and open-ended problems; an ability to formulate problems in precise terms and to identify key issues, and the confidence to try different approaches in order to make progress on challenging problems. Numeracy is subsumed within this area. (D1)*
   2. *Analytical skills – associated with the need to pay attention to detail and to develop an ability to manipulate precise and intricate ideas, to construct logical arguments and to use technical language correctly. (D4)*
   3. *Personal skills – the ability to work independently, to use initiative, to organise oneself to meet deadlines. (D5)*
3. A synopsis of the curriculum

*Aims: After taking the classes students should be more fluent and adept at solving and discussing general problems in Physics (and its related disciplines of mathematics and engineering)*

*There is no formal curriculum for this course which uses and demands only physical and mathematical concepts with which the students at this level are already familiar. Instruction is given in:*

* *Systematic and effective problem formulation*
* *Approximation and simplification methods as they pertain to allowing viable solution methods.*

*Problems are presented and solutions discussed in topics spanning the entire undergraduate physics curriculum (Mechanics and statics, thermodynamics, electricity and magnetism, optics, wave mechanics, relativity etc)*

*Problems are also discussed that primarily involve the application of formal logic and reasoning,  
simple probability, statistics, estimation and linear mathematics.*

1. Indicative Reading List

*Oman and Oman, Physics for the Utterly Confused, McGraw Hill [QC23]*

*Barrass, Scientists Must Write, Routledge [Q223]*

1. Learning and Teaching Methods, including the nature and number of contact hours and the total study hours which will be expected of students, and how these relate to achievement of the intended module learning outcomes

*20 workshop classes. These include discussion and presentation of a variety of problems and their solution and guidance on a mini-project which forms part of the syllabus. This module is expected to occupy 150 total study hours, including the contact hours above.*

*The workshops address learning outcomes 11.1-11.5 and 12.1-12.2. The mini-project addresses 11.1, 11.2, 11.6, and 12.1-12.3.*

1. Assessment methods and how these relate to testing achievement of the intended module learning outcomes

*Coursework 40% including class tests and mini-project*

*Final (written, unseen, length 3 hours) examination 60%*

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*The class tests and examinations test students’ knowledge and understanding of laws and principles (11.1, 12.2) and application of techniques to model behaviour and solve problems (11.2-11.5, 12.1). The mini-project will require the students to manage their own revision using reference materials and present their findings (11.5, 11.6, 12.3)*

1. Implications for learning resources, including staff, library, IT and space

*None.*

1. The School recognises and has embedded the expectations of current disability equality legislation, and supports students with a declared disability or special educational need in its teaching. Within this module we will make reasonable adjustments wherever necessary, including additional or substitute materials, teaching modes or assessment methods for students who have declared and discussed their learning support needs. Arrangements for students with declared disabilities will be made on an individual basis, in consultation with the University’s disability/dyslexia support service, and specialist support will be provided where needed.
2. Campus where module will be delivered:

*Canterbury*