# PROGRAMME APPROVAL FORM

## SECTION 1 – THE PROGRAMME SPECIFICATION

### 1. Programme title and designation

<table>
<thead>
<tr>
<th>Award</th>
<th>Title</th>
<th>Credit Value</th>
<th>ECTS equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSci</td>
<td>Physics</td>
<td>480</td>
<td>240</td>
</tr>
</tbody>
</table>

### Any special criteria

Students should normally have passed 5CCP2255 before they enter the third year.

To progress to the final (fourth) year, third-year students be expected to achieve, a standard equivalent to upper second class honours in the undergraduate part of their programme (years 1-3). Students achieving a weighted average of at least 60% automatically progress to the fourth year while any students with an average in the 55-60% range will be considered on a case by case basis, taking into account all relevant factors including especially their third year performance.

### 2. Final award

<table>
<thead>
<tr>
<th>Award</th>
<th>Title</th>
<th>Credit Value</th>
<th>ECTS equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSci</td>
<td>Physics</td>
<td>480</td>
<td>240</td>
</tr>
</tbody>
</table>

### Any special criteria

Students should normally have passed 5CCP2255 before they enter the third year.

To progress to the final (fourth) year, third-year students be expected to achieve, a standard equivalent to upper second class honours in the undergraduate part of their programme (years 1-3). Students achieving a weighted average of at least 60% automatically progress to the fourth year while any students with an average in the 55-60% range will be considered on a case by case basis, taking into account all relevant factors including especially their third year performance.

### 3. Nested awards

<table>
<thead>
<tr>
<th>Award</th>
<th>Title</th>
<th>Credit Value</th>
<th>ECTS equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc (Hons)</td>
<td>Physics</td>
<td>360</td>
<td>180</td>
</tr>
</tbody>
</table>

### Any special criteria

Students who commence this award but who do not achieve the relevant learning outcomes can be awarded a BSc as long as the relevant number of credits and modules have been achieved.

### 4. Exit awards

<table>
<thead>
<tr>
<th>Award</th>
<th>Title</th>
<th>Credit Value</th>
<th>ECTS equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc (Hons)</td>
<td>Physics</td>
<td>360</td>
<td>180</td>
</tr>
</tbody>
</table>

### Any special criteria

Students who commence this award but who do not achieve the relevant learning outcomes can be awarded a BSc as long as the relevant number of credits and modules have been achieved.

| Ordinary Degree (BSc) | Physics | 300 | 150 | N/A |

PAF initially approved: 26 June 2007
PAF Amended for 2008/9
PAF modified by ASQ re: exit awards: 10th May 2010
PAF modified re: condonement: 5 September 2011
PAF modified by QAS for 2012/13: 8th March 2012
PAF modified re exit award title: 29 March 2012
PAF modified re: programme table: 19 April 2012
PAF modified and finalised for 2012/13: 7 September 2012
PAF modified by QAS for 2013/14: 16th January 2013
PAF finalised for 2013/14: 22 October 2013
PAF modified by QAS for 2014/15: 25th March 2014
PAF finalised for 2014/15: October 2014
Programme approval 2006/07

<table>
<thead>
<tr>
<th>UG Diploma</th>
<th>Natural and Mathematical Sciences</th>
<th>240</th>
<th>120</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>UG Certificate</td>
<td>Natural and Mathematical Sciences</td>
<td>120</td>
<td>60</td>
<td>N/A</td>
</tr>
<tr>
<td>PG Certificate</td>
<td>Natural and Mathematical Science</td>
<td>60 at level 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Level in the qualifications framework M

6. Attendance

<table>
<thead>
<tr>
<th>Mode of attendance</th>
<th>Full-time</th>
<th>Part-time</th>
<th>Distance learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum length of programme</td>
<td>4 years</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum length of programme</td>
<td>10 years</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

7. Awarding institution/body

8. Teaching institution

9. Proposing department

10. Programme organiser and contact details

11. UCAS code (if appropriate)

12. Relevant QAA subject benchmark/professional and statutory body guidelines

13. Date of production of specification

14. Date of programme review

16. Educational aims of the programme

- To educate graduates so that they have an understanding of most fundamental laws and principles of physics, along with their application.
- To prepare students for a professional career either within or outside physics.
- To ensure that students can manage their own learning with the aid of suitable resources.
- To develop students’ ability to conduct experiments, analyse the results using various quantitative methods and draw valid conclusions.
- To provide a supportive environment, encouraging students to be critically receptive to new ideas and to attain their full academic potential.
- To prepare students for a research degree or research-based career in physics or a related discipline.
To develop students’ ability to plan and execute an experimental or theoretical investigation, using ideas and techniques appropriate to research work in the relevant discipline, and including critical and quantitative assessment of their own work and the work of others.

### 17. Educational objectives of the programme/programme outcomes

The student should acquire:
- A sound knowledge and understanding in physics and related disciplines.
- Experience in the applications of physical principles in various branches of physics.
- The ability to analyse and solve problems in physics using a wide range of quantitative methods and procedures.
- The ability to carry out experiments/investigations, critically analyse results, draw valid conclusions and communicate findings orally and in writing.
- A wide range of transferable skills, including problem-solving, investigative, IT and personal skills.

#### Knowledge and understanding

The programme provides a **knowledge and understanding** of the following:

1. General and fundamental concepts, principles, theories and results of physics.
2. The use of mathematical principles and procedures in exploring and describing the physical world.
3. The applications of fundamental physical laws and principles within major areas of physics.
4. Ethical issues in physics, and professional integrity.

These are achieved through the following **teaching/learning methods and strategies**:

- Various teaching/learning methods and strategies, including lectures, tutorials, projects and practical laboratory sessions.

**Assessment:**

Students are mainly assessed by means of formal examinations, as well as coursework, reports, class tests, poster and oral presentations.

#### Intellectual skills:

1. Analyse and solve a variety of problems in physics by means of appropriate applications of physical principles and mathematical techniques.
2. Formulate theoretical and practical problems in physics.
3. Analyse and compare experimental and investigation results, test the strength and validity of numerical results and hypotheses.
4. Illustrate a sound understanding of the role of mathematical modelling, uncertainty and approximation in physics.
5. Critically evaluate arguments, assumptions, abstract concepts and data.

These are achieved through the following **teaching/learning methods and strategies**:

- Intellectual skills are developed through formal lectures, tutorials, practical sessions, directed self-learning, problem classes and projects.

**Assessment:**

Students are mainly assessed by means of formal examinations, as well as coursework, reports, class tests, poster and oral presentations.
6. Understand the principles and ethics of the scientific method.

Practical skills:
1. Conduct experiments in physics safely, using basic laboratory apparatus and techniques effectively.
2. Produce clear and accurate scientific reports and make technical presentations.
3. Make appropriate and effective use of scientific literature, including research articles.
4. Use computational tools and packages effectively in calculations and analysis.

These are achieved through the following teaching/learning methods and strategies:
Laboratory modules and projects, in which there is informal and formal help and feedback on reports and presentations.
Assessment of practical and scientific reporting skills is through marking of lab books, experimental write-ups, project reports and oral examinations.

Generic/transferable skills:
Key Skills:
1. Demonstrate effective problem-solving skills in both theoretical and practical contexts.
2. Work independently and effectively, managing self learning/teaching and show self-reliance and personal responsibility.
3. Participate effectively and constructively as part of a team.
4. Demonstrate clear and effective oral and written communication skills.
5. Manage time, prioritise workloads and work to deadlines.
6. Evaluate and assess their own abilities, performance and understanding.

These are achieved through the following teaching/learning methods and strategies:
Transferable skills are developed through various activities. Although they are not all explicitly taught, these skills are learnt throughout the programmes in a structured manner. The first skill is developed primarily through lectures, tutorials, laboratory and project modules. Other skills are encouraged throughout the programmes, and are nurtured particularly within the context of small-group tutorials and project work.

18. Statement of how the programme has been informed by the relevant subject benchmark statement(s)/professional and statutory body guidelines

PAF initially approved: 26 June 2007
PAF Amended for 2008/9
PAF modified by ASQ re: exit awards: 10th May 2010
PAF modified re: condonement: 5 September 2011
PAF modified by QAS for 2012/13: 8th March 2012
PAF modified re exit award title: 29 March 2012
PAF modified re: programme table: 19 April 2012
PAF modified and finalised for 2012/13: 7 September 2012
PAF modified by QAS for 2013/14: 16th January 2013
PAF finalised for 2013/14: 22 October 2013
PAF modified by QAS for 2014/15: 25th March 2014
PAF finalised for 2014/15: October 2014
The programme covers the content and transferable skills listed in the QAA benchmarks and in the Institute of Physics criteria for accreditation.

19. Programme structure and award requirements

(a) numbers of compulsory and optional modules to be taken in each year of the programme
Year 1: 30 credits core, 90 credits compulsory
Year 2: 15 credits core, 75 credits compulsory, 30 credits optional
Year 3: 15 credits core, 60 credits compulsory, 30 credits optional
Year 4: 45 credits core, 90 credits optional with at least 75 at level 7

In addition, optional modules with a credit value up to the maximum permitted by the regulations may be taken during the degree programme, subject to the approval of the Programme Board.

(b) range of credit levels permitted within the programme
4, 5, 6 and 7

(c) maximum number of credits permitted at the lowest level
150

(d) minimum number of credits required at the highest level
90 with at least 75 credits at level 7

(e) progression and award requirements (if different from the standard)
To progress from Year 1 to Year 2 a student must have no mark lower than 33% in level 4 Physics modules.

In addition, students should normally have passed 5CCP2255 before they enter the third year.

To progress to the final (fourth) year, third-year students be expected to achieve, a standard equivalent to upper second class honours in the undergraduate part of their programme (years 1-3). Students achieving a weighted average of at least 60% automatically progress to the fourth year while any students with an average in the 55-60% range will be considered on a case by case basis, taking into account all relevant factors including especially their third year performance.

(f) maximum number of credits permitted with a condoned fail (core modules excluded)
45 credits as per College regulations.

In all cases, the condoning of failed marks will be at the discretion of the programme examination board and in accordance with the College regulations.

(g) are students permitted to take a substitute module, as per regulation A3?
No

(h) other relevant information to explain the programme structure
Students may be permitted to take modules from other Departments within King’s or intercollegiate modules with academic approval. Students may not obtain credit from modules based on largely overlapping content.

**Transfers between programmes**

Students who transfer between the programmes: BSc Physics, MSci Physics, BSc Physics with a Year Abroad, BSc Physics with Medical Applications, BSc Physics with Astrophysics, can change programme without penalty, since the same modules are available. There may be some differences on the Cr/Cp/O designations for some modules, with which the students will normally be expected to conform.

**Transfers onto this programme**

Students who transfer onto this programme from other Physics major/minor or Physics Joint honours degree programmes are normally permitted to have omitted:

- 4CCP1000: Laboratory Physics I (if transferring after the first year)
- 5CCP2000: Laboratory Physics II (if transferring after the second year)

Modules taken in their minor or joint subject can substitute for optional modules (and 4CCP1000 and 5CCP2000) in all years for these transfer students.

The modules 4CCM111a and 4CCM112a can substitute for 4CCP1351 and 4CCP1352.

The Mathematics modules 5CCM211a and 5CCM231a can substitute for 5CCP2255.

Students who commence this award but who do not achieve the relevant learning outcomes can be awarded a BSc as long as the relevant number of credits and modules have been achieved.
Programme Structure
See Programme Handbook for modules to be taken.

20. Marking criteria
The marking scheme for this programme follows the College generic criteria and additionally those in the Faculty of Natural & Mathematical Sciences.
1. Programme name  MSci Physics

2. If the programme is a joint award with an institution outwith the University of London has the necessary approval been sought from Academic Board?

   Yes  [ ]  No  [ ]  Not applicable  [X]

Please attach a copy of the request to Academic Board

3. In cases of joint honours programmes please provide a rationale for the particular subject combination, either educational or academic

   Not applicable

4. If the programme involves time outside the College longer than a term, please indicate how the time will be spent, the length of time out and whether it is a compulsory or optional part of the programme

   N/A  
   Year abroad  [ ]  Year in employment  [ ]  Placement  [ ]  Other (please specify)  [ ]

   Time spent ……………………… Compulsory/optional …………………

5. Please provide a rationale for any such time outside the College, other than that which is a requirement of a professional or statutory body

   The module teaching in the fourth year of the MSci degree is shared between King's, UCL, Royal Holloway and Queen Mary Colleges in the University of London. This allows the students to choose between a much wider range of optional modules than any one College could offer, and each module is taught by a lecturer who is expert in the subject.

6. Please give details if the programme requires validation or accreditation by a professional or statutory body

   Accreditation is voluntary

   Name and address of PSB
   Institute of Physics

PAF initially approved: 26 June 2007
PAF Amended for 2008/9
PAF modified by ASQ re: exit awards: 10th May 2010
PAF modified re: condonement: 5 September 2011
PAF modified by QAS for 2012/13: 8th March 2012
PAF modified re exit award title: 29 March 2012
PAF modified re: programme table: 19 April 2012
PAF modified and finalised for 2012/13: 7 September 2012
PAF modified by QAS for 2013/14: 16th January 2013
PAF finalised for 2013/14: 22 October 2013
PAF modified by QAS for 2014/15: 25th March 2014
PAF finalised for 2014/15: October 2014
7. In cases where parts or all of the programme (other than those in box 4 above) are delivered either away from one of the College campuses and/or by a body or bodies external to the College please provide the following details

**Name and address of the off-campus location and/or external body**
Fourth year of the MSci:
University College (University of London)
Queen Mary College (University of London)
Royal Holloway College (University of London)

**Percentage/amount of the programme delivered off-campus or by external body**
Up to 16% (up to 75% of 4th year)

**Nature of the involvement of external body**
Students take optional 4th year modules in the other London Colleges named above

**Description of the learning resources available at the off-campus location**
Similar resources to those at King's. Agreements are in place for students to use library and computer provision at UCL, and the other colleges, while studying for modules there.

**What mechanisms will be put in place to ensure the ongoing monitoring of the delivery of the programme, to include monitoring of learning resources off-site or by the external body?**
The fourth-year programme is overseen by an intercollegiate MSci programme planning committee with representatives from each of the participating colleges. All modules are delivered and examined according to their home College Teaching Committee and Examination Board policies. An intercollegiate examiner is present as an observer at the Examination Board meetings to ensure parity between Colleges.

**Please attach the report of the visit to the off-campus location**
Not applicable.

Additionally, for Undergraduate Ambassador Scheme 6CCP3133:

**Name and address of the off-campus location and/or external body**
The Undergraduate Ambassador Scheme: London secondary schools

**Percentage/amount of the programme delivered off-campus or by external body**
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programme approval 2006/07</td>
<td></td>
</tr>
<tr>
<td>PAF initially approved</td>
<td>26 June 2007</td>
</tr>
<tr>
<td>PAF Amended for 2008/9</td>
<td></td>
</tr>
<tr>
<td>PAF modified by ASQ re: exit awards</td>
<td>10th May 2010</td>
</tr>
<tr>
<td>PAF modified re: condonement</td>
<td>5 September 2011</td>
</tr>
<tr>
<td>PAF modified by QAS for 2012/13: 8th March 2012</td>
<td></td>
</tr>
<tr>
<td>PAF modified re exit award title</td>
<td>29 March 2012</td>
</tr>
<tr>
<td>PAF modified re: programme table</td>
<td>19 April 2012</td>
</tr>
<tr>
<td>PAF modified and finalised for 2012/13: 7 September 2012</td>
<td></td>
</tr>
<tr>
<td>PAF modified by QAS for 2013/14: 16th January 2013</td>
<td></td>
</tr>
<tr>
<td>PAF finalised for 2013/14: 22 October 2013</td>
<td></td>
</tr>
<tr>
<td>PAF modified by QAS for 2014/15: 25th March 2014</td>
<td></td>
</tr>
<tr>
<td>PAF finalised for 2014/15: October 2014</td>
<td></td>
</tr>
</tbody>
</table>

**Up to 2% (optional 3rd year 15 credit course)**

**Nature of the involvement of external body**
Students spend a few hours per week in a Physics Department of a London secondary School, supervised by the staff of that school, assisting in the teaching of Physics.

**Description of the learning resources available at the off-campus location**
Normal secondary school resources.

**What mechanisms will be put in place to ensure the ongoing monitoring of the delivery of the programme, to include monitoring of learning resources off-site or by the external body?**
All schools are visited by KCL Physics Department staff, and an individual teacher is responsible for the student in the school. A member of KCL staff monitors the students while they are in the undergraduate ambassador scheme.

**Please attach the report of the visit to the off-campus location**
Not applicable