**UNIVERSITY OF KENT**

**PROGRAMME SPECIFICATION**

*Please note:* This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she passes the programme. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the programme handbook. The accuracy of the information contained in this specification is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

### GlaxoSmithKline Research Chemistry Continuing Education Programme

<table>
<thead>
<tr>
<th><strong>Degree and Programme Title</strong></th>
<th>Postgraduate Certificate in Professional Development (Research Chemistry)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Awarding Institution/Body</strong></td>
<td>University of Kent</td>
</tr>
<tr>
<td><strong>2. Teaching Institution</strong></td>
<td>GlaxoSmithKline (GSK)</td>
</tr>
<tr>
<td><strong>3. School responsible for management of the programme</strong></td>
<td>Physical Sciences</td>
</tr>
<tr>
<td><strong>4. Teaching Site</strong></td>
<td>GSK, Stevenage</td>
</tr>
<tr>
<td><strong>5. Mode of Delivery</strong></td>
<td>Part-time</td>
</tr>
<tr>
<td><strong>6. Programme accredited by</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>7. a) Final Award</strong></td>
<td>Postgraduate Certificate</td>
</tr>
<tr>
<td><strong>b) Alternative Exit Awards</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>8. Programme</strong></td>
<td>Postgraduate Certificate in Professional Development (Research Chemistry)</td>
</tr>
<tr>
<td><strong>9. UCAS Code (or other code)</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>10. Credits/ECTS value</strong></td>
<td>60 credits (30 ECTS)</td>
</tr>
<tr>
<td><strong>11. Study Level</strong></td>
<td>Level 7</td>
</tr>
<tr>
<td><strong>12. Relevant QAA subject benchmarking group(s)</strong></td>
<td>Chemistry</td>
</tr>
<tr>
<td><strong>13. Date of creation/revision</strong></td>
<td>27th February 2007; 22nd March 2018</td>
</tr>
<tr>
<td><strong>14. Intended Start Date of Delivery of this Programme</strong></td>
<td>from April 2018</td>
</tr>
</tbody>
</table>

**15. Educational Aims of the Programme**

The programme aims to:
UNIVERSITY OF KENT

- develop in participants, through an education in chemistry, a range of transferable skills of value in their career progression
- provide participants with a broad and balanced expansion of their chemical knowledge and practical skills, which they can utilise to enhance their overall job performance and which they can also apply to the solution of problems and issues encountered in their day-to-day work
- ensure that they continue their scientific training and development in those aspects of Chemistry and related areas that are particularly relevant to the work of research chemists at GSK
- involve participants in an intellectually stimulating and satisfying experience of learning, enhancing their enthusiasm for their work
- empower employees who entered the company at graduate level to compete for senior positions within GSK

16. Programme Outcomes
The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the subject benchmarking statement for Chemistry (Master’s level).

A. Knowledge and Understanding
On successful completion of this programme, participants will be able to:

1. apply advanced knowledge in chemistry to provide direct intellectual input into the progression of ongoing drug discovery programmes;

2. demonstrate a knowledge of recent advances within the field of Synthetic Chemistry and in related areas, including:
   - Reaction Selectivity: Protecting Groups
   - Retrosynthesis
   - Catalytic Organometallic Chemistry: Palladium
   - Oxidation and Reduction
   - Carbonyl and Enolate Chemistry
   - Green Chemistry
   - Aromatic Chemistry
   - Reactions of Heterocycles
   - Phosphorous and Sulphur
   - Boron and Silicon
   - Rearrangements
   - Physical Organic Chemistry
   - Heterocyclic Assembly
   - Catalytic Organometallic Chemistry: Beyond Palladium
   - Reactive Intermediates
   - Pericyclic Reactions
   - Asymmetric Synthesis
   - Biological Chemistry
3. demonstrate knowledge and understanding of the drug discovery process;

4. evaluate critically internal and external sources of chemical data/information and their content;

5. demonstrate understanding of structure searching methods – isomeric, substructure searching, similarity etc.;

6. demonstrate understanding of the theory underlying the commonly used purification and analytical techniques;

7. demonstrate an understanding of relevant research methodologies and techniques, and their appropriate application within their research field.
B. Skills and Other Attributes

On successful completion of this programme, participants will be able to:

1. Chemistry-related cognitive abilities and skills
   
   a. discuss chemistry with confidence in the work context and with other chemists of a range of experience and seniority;

   b. utilise the growing body of knowledge towards the efficient achievement of project goals;

   c. apply knowledge and understanding to the solution of qualitative and quantitative problems of a familiar and unfamiliar nature;

   d. recognise and analyse novel problems and develop strategies for their solution;

   e. demonstrate skills in the evaluation, interpretation and understanding of chemical information and data including computational and data-processing skills relating to chemical information;

   f. demonstrate skills in the clear and correct presentation of scientific material and arguments, in writing and orally;

   g. analyse critically their findings and those of others;

   h. demonstrate appreciation of good research practice in the discipline at GSK;

2. Chemistry-related practical skills

   i. demonstrate skills in the operation of in-house apparatus and instrumentation, particularly that used in purification and analysis;

   j. apply the developing practical abilities towards the efficient realisation of project goals;

   k. interrogate data derived from laboratory observations, particularly from spectroscopic studies, including the demonstration of proficiency in the use and application of:
      
      i. LC-MS as a key analytical technique
      
      ii. proton NMR spectroscopy in structure elucidation and evaluation of compound purity;

   l. observe Health and Safety requirements relevant to their role and pay due regard to personal safety and the safety of others.
C. Transferable and Professional skills

On successful completion of this programme, participants will be able to demonstrate that the following skills have been enhanced to postgraduate level:

m. written and verbal communication skills, including the ability to: write and present clearly and in a style appropriate to the purpose; construct coherent arguments and articulate ideas clearly at a high level with scientific members of staff; constructively defend research outcomes; effectively support the learning of others when engaged in teaching, mentoring or demonstrating activities;

n. problem-solving skills, relating to qualitative and quantitative information, extending to situations where evaluations have to be made on the basis of limited information;

o. information-retrieval skills and literature interrogation in relation to primary and secondary information sources, including retrieval through on-line computer searches;

p. interpersonal skills, relating to the development and maintenance of co-operative networks and working relationships with supervisors, colleagues and peers within GSK and the wider research community;

q. study skills needed for professional development;

r. business skills including time-management;

s. personal effectiveness skills including: a willingness to learn and acquire knowledge; being creative, innovative and original in their approach to research; recognition of boundaries and the use of sources of support as appropriate; showing initiative, working independently and being self-reliant in a team environment; displaying thoroughness and reliability;

t. display the ability to conceive/develop ideas, discuss these with colleagues, plan and implement resulting work

u. take ownership of, and demonstrate commitment to, continued professional development.

For more information on which modules provide which skills, see the attached module mapping

17. Programme Structures and Requirements, Levels, Modules, Credits and Awards

To achieve the postgraduate certificate, participants must achieve 60 credits at master’s level from a combination of mandatory and optional modules. The programme is delivered and assessed entirely in the workplace and is normally completed within three years from the point of enrolment.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Level</th>
<th>Credits</th>
<th>Term(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSK/Chem1</td>
<td>Synthetic Chemistry Module 1</td>
<td>M</td>
<td>10</td>
<td>Spring</td>
</tr>
</tbody>
</table>
18. Work-Based Learning

The programme has been designed to be entirely work-based and/or work related. It builds on existing arrangements at GSK for continuing development and training, with the addition of robust assessment processes. The formal scientific training programme is well established and is provided in a range of formats by internal and external experts, the latter being mainly academic staff from university chemistry departments. The formal programme supplements “on the job” training provided by immediate supervisors, mentors and other GSK experts. Supervisors are actively encouraged and supported in their role to provide additional training and support to the participants, and will regularly review and build on the information taught in the structured sessions. Furthermore, GSK R&D has a company-wide mentoring network whereby any employee is able to assess their development needs, find a suitable mentor from a dynamic database, and create an individualised mentoring agreement.

19. Support for Students and their Learning

- GSK Induction
- Programme Leader and Administrator
- GSK Employee Supervisory system
- GSK Employee Supervisory annual review
- Participants Guide

GSK has state of the art laboratory facilities, equipment and tools.

Participants all have their own laptops which gives them access to various forms of on-line support, including electronic library access. The customised collection of information resources from The Library includes:

- Over 4000 electronic journals and 750 electronic books;
- Chemistry databases: Scifinder; Reaxys; Patbase;
- Search Literature & Conferences: Scopus, Embase and Searchlight; SciFinder
- Competitor, Commercial & News: Competitor Information & News Portal; Pharmaprojects; Decision Resources; Cortellis
- Clinical Trials & Drug Pipeline: Trialtrove; Pharmaprojects; Cortellis; PharmaCircle
Participants are also able to access directly the many specialist IT tools that are available and a wide range of scientific and other courses through the GSK MY Learning environment.

### 20 Entry Profile
The minimum age to study a degree programme at the university is normally at least 17 years old by 20 September in the year the programme begins. There is no upper age limit.

#### 20.1 Entry Route
Applicants must have a relevant degree i.e. Chemistry. Any GSK chemist entering the company at graduate level is recommended to participate in the continuing education programme at GSK and would therefore be expected to register to receive academic credit and the subsequent postgraduate certificate.

#### 20.2 What does this programme have to offer?
Key aspects of the programme that will be attractive to prospective students
- Potential progression opportunities
- Specialist lecturers/guest speakers in the discipline
- Specialist equipment, software etc.

#### 20.3 Personal Profile
- A demonstrable aptitude for studying chemistry
- A willingness to enhance scientific and professional development
- The ability to write coherent and technically accurate scientific information

### 21. Methods for Evaluating and Enhancing the Quality and Standards of Teaching and Learning

#### 21.1. Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards

- Periodic Programme Review [http://www.kent.ac.uk/teaching/qa/codes/taught/annexf.html](http://www.kent.ac.uk/teaching/qa/codes/taught/annexf.html)
- External Examiners system [http://www.kent.ac.uk/teaching/qa/codes/taught/annexk.html](http://www.kent.ac.uk/teaching/qa/codes/taught/annexk.html)
- Annual programme and module monitoring reports [http://www.kent.ac.uk/teaching/qa/codes/taught/annexe.html](http://www.kent.ac.uk/teaching/qa/codes/taught/annexe.html)
- QAA Higher Education Review [http://www.qaa.ac.uk/InstitutionReports/types-of-review/higher-education-review/Pages/default.aspx](http://www.qaa.ac.uk/InstitutionReports/types-of-review/higher-education-review/Pages/default.aspx)
- Student module evaluations
### UNIVERSITY OF KENT

- Annual staff appraisal
- Programme Management Committee
- Assessment Panel

#### 21.2. Committees with responsibility for monitoring and evaluating quality and standards

- Board of Examiners
- School Graduate Studies Committee
- Faculty Graduate Studies Committee
- Faculty Board
- Graduate School Board
- Programme Management Committee

#### 21.3. Mechanisms for gaining student feedback on the quality of teaching and their learning experience

- Student module evaluations
- Programme Management Committee

#### 21.4 Staff Development priorities include:

- Annual Appraisals
- Participating in development days
- Programme team meetings
- Scientific lecture series
- Equality, Diversity and Inclusivity (EDI) awareness

### 22 Indicators of Quality and Standards

- Annual External Examiner reports
- Results of periodic programme review *(2018)*
- Annual programme and module monitoring reports
- QAA Higher Education Review 2015

#### 22.1 The following reference points were used in creating these specifications:

- QAA Benchmarking statement/s for *(Chemistry)*

### 23 Inclusive Programme Design

The Collaborative Partner recognises and has embedded the expectations of current equality legislation, by ensuring that the programme is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.
# Programme Title: GSK Postgraduate Certificate in Professional Development

## Stage 1

<table>
<thead>
<tr>
<th>Programme Learning outcomes</th>
<th>Knowledge and Understanding:</th>
<th>SC1</th>
<th>SC2</th>
<th>SC3</th>
<th>DD</th>
<th>P&amp;A</th>
<th>IT</th>
<th>ITadv</th>
<th>PPDP</th>
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</tbody>
</table>

## Intellectual Skills:

| B1a                         | X X X X                       |     |     |     |    |     |    |       |      |
| B1b                         | X X X X                       | X   |     |     |    |     |    |       |      |
| B1c                         | X X X X                       | X   |     |     |    |     |    |       |      |
| B1d                         | X X X X                       | X   |     |     |    |     |    |       |      |
| B1e                         | X X X X                       | X   |     |     |    |     |    |       |      |
| B1f                         | X X X X                       | X   |     |     |    |     |    |       |      |
| B1g                         | X X X X                       | X   |     |     |    |     |    |       |      |
| B1h                         | X X X X                       | X   |     |     |    |     |    |       |      |

## Subject-specific Skills:

| B2i                         | X                             |     |     |     |    |     |    |       |      |
| B2j                         | X X X                         | X   |     |     |    |     |    |       |      |
| B2k                         | X                             |     |     |     |    |     |    |       |      |
| B2l                         | X                             |     |     |     |    |     |    |       |      |

## Transferable Skills:

| Cm                          | X X X X                       | X   |     |     |    |     |    |       |      |
| Cn                          | X X X X                       | X   |     |     |    |     |    |       |      |
| Co                          | X X X X                       | X   |     |     |    |     |    |       |      |
| Cp                          | X X X X                       | X   |     |     |    |     |    |       |      |
| Cq                          | X X X X                       | X   |     |     |    |     |    |       |      |
| Cr                          | X                             | X   |     |     |    |     |    |       |      |
| Cs                          | X X X X                       | X   |     |     |    |     |    |       |      |
| Ct                          | X X X X                       | X   |     |     |    |     |    |       |      |
| Cu                          | X                             |     |     |     |    |     |    |       |      |

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**SC1**: Synthetic Chemistry Module 1  
**SC2**: Synthetic Chemistry Module 2  
**SC3**: Synthetic Chemistry Module 3  
**DD**: Drug Discovery  
**P&A**: Techniques for Purification and Analysis  
**IT**: IT Tools for Chemists  
**ITadv**: Advanced IT Tools for Chemists  
**PPDP**: Personal and Performance Development