

Programme title: BSc Pharmaceutical and Cosmetic Science

Academic Year:	2023-24
Degree Awarding Body:	University of Bradford
Partner(s), delivery organisation or support provider (if appropriate):	
Final and interim award(s):	BSc (Honours) [Framework for Higher Education Qualifications (FHEQ) level 6] BSc [Framework for Higher Education Qualifications (FHEQ) level 6] Diploma of Higher Education [Framework for Higher Education Qualifications (FHEQ) level 5] Certificate of Higher Education [Framework for Higher Education Qualifications (FHEQ) level 4]
Programme accredited by (if appropriate):	n/a
Programme duration:	Three years (full-time)
UCAS code:	
QAA Subject benchmark statement(s):	n/a
Date last confirmed and/or minor modification approved by Faculty Board	February 2023

Please note: This programme specification has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further detail about their course and any minor changes will be discussed and/or communicated at this point.

Introduction

The BSc Pharmaceutical and Cosmetic Science is an innovative programme delivering a broad-based scientific education along with the knowledge and technical skills needed for a career in the pharmaceutical, nutraceutical and/or cosmetic science industry. The programme sits within the School of Pharmacy and Medical Sciences, which has a strong reputation for pioneering innovative approaches in the field of Pharmacy education.

Graduates from this programme will have hands-on experience in the area of product processing and evaluation, highly developed analytical and problem-solving skills, and the technical skills and knowledge needed for employment in multiple sectors. Importantly, they will be prepared to address the complex problems of industry in pharmaceutical/cosmetic product manufacturing, quality assurance, research, regulatory affairs and business development.

The programme embeds active engagement with sustainable product development and sustainable packaging, as well as consideration of the United Nations sustainable development goals in the areas of good health and wellbeing, quality education, decent work and economic growth, industry, innovation and infrastructure and responsible consumption and production. Consideration of equality, diversity and inclusivity (EDI) is also embedded within the programme and students will be encouraged to consider elements of their own background and culture, as well as that of others - values, communication styles, beliefs and practices - and reflect on the importance of these elements for the pharmaceutical, nutraceutical and cosmetic sectors. Opportunities for graduates to develop their innovation and entrepreneurship abilities, including through digital advancements (artificial intelligence), are provided through the programme's spiral curriculum.

Whilst a degree provides the qualification necessary to start a professional career, graduates will need to continue to develop skills throughout their working life, so this programme couples a scientific education with the development of the skills necessary for lifelong learning.

The development of a range of transferable skills for the workplace is supported at all stages of the programme. For example, time-management, adaptability, self-directed working, reflectiveness, an appreciation of diversity, the ability to apply different approaches to suit a situation or problem and the skills to communicate with specialist and non-specialist audiences.

Programme Aims

The programme is intended to:

- deliver a programme in Pharmaceutical and Cosmetic Science for students from diverse cultural and educational backgrounds;
- enhance learning by providing a choice of study options to suit students' interests and/or career aspirations;
- develop students' technical knowledge and skills in the area of formulation and processing technologies which can be applied in the development of pharmaceutical, nutraceutical and cosmetic products;

- provide students with the opportunity to enhance their learning and professional and scientific skills by applying their knowledge and understanding in employment through a sandwich placement year (4-year programme);
- create an awareness of the implications of ethnicity, gender as well as social and cultural diversity in health and disease;
- engage and involve stakeholders including employers, regulatory agencies, professional bodies, students and government agencies to prepare graduates with the skills relevant in the wider sectors;
- develop research skills to prepare students for postgraduate study;
- nurture entrepreneurship, sustainability and students' ability to work in a multidisciplinary environment.
- provide students with the opportunity to apply core principles of sustainable product development and sustainable packing in addressing 'real world' problems.
- develop personal transferable skills that enable students to move successfully into employment, further education and enhance their societal engagement;
- provide a supportive and structured environment in which students are encouraged to develop the independent study skills required for lifelong learning.

Programme Learning Outcomes

To be eligible for the award of Certificate of Higher Education at FHEQ level 4, students will be able to:

- LO1 Understand and apply the core principles of preformulation and biology related to pharmaceutical and cosmetic sciences.
- LO2 Safely and effectively perform relevant experiments following given protocols.
- LO3 Evaluate and interpret qualitative and quantitative data (including numerical, artificial intelligence and data analytics).
- LO4 Evaluate the appropriateness of different approaches to solving preformulation problems.
- LO5 Accurately present and communicate scientific information to peers and mentors with structured and coherent arguments.
- LO6 Manage time and learning effectively both independently and as part of a group.
- LO7 Explain and contextualise issues of sustainability, ethics and inclusivity within pharmaceutical and cosmetic sciences sectors.

Additionally, to be eligible for the award of Diploma of Higher Education at FHEQ level 5, students will be able to:

- LO8 Understand and critically appraise established concepts of physicochemical characterisations of active ingredients and excipients.
- LO9 Apply underlying concepts and principles of sustainable product development in solving 'real world' problems.

- LO10 Apply underlying concepts and principles of marketing planning and digital age in solving 'real world' problems.
- LO11 Critically evaluate experimental design and data (including the incorporation of fundamental statistics, psychology, and digital intervention concepts) to solve formulation problems.
- LO12 Effectively communicate information to non-specialist audiences with structured and coherent arguments.
- LO13 Demonstrate professional, inclusive and ethical collaboration skills.

Additionally, to be eligible for the award of Ordinary Degree of Bachelor at FHEQ level 6, students will be able to:

- LO14 Demonstrate a systematic and critical understanding of key concepts and methods including digital advances in the development of pharmaceutical and cosmetic products.
- LO15 Critically and systematically evaluate arguments, assumptions, abstract concepts and data in order to make judgements and creatively solve problems.
- LO16 Demonstrate a systematic and critical understanding of the importance of innovation (including applying entrepreneurialism, regulation and sustainability) within science and industry and know how to promote it.
- LO17 Effectively communicate information to specialist and non-specialist audiences with structured and coherent arguments, respecting difference in all its forms.

Additionally, to be eligible for the award of Honours Degree of Bachelor at FHEQ level 6, students will be able to:

- LO18 Design and conduct an individual project in the field of Pharmaceutical and Cosmetic Science, drawing on concepts, methods and techniques at the forefront of the discipline and applying advanced professional skills and behaviours.

Curriculum

The curriculum is designed to enable students to develop the necessary level of knowledge in the stream of Pharmaceutical and Cosmetic Science. The knowledge of formulation science and the technical principles and skills required for processing of formulations are the same for pharmaceutical, nutraceutical and cosmetic formulations. The curriculum trains students to disseminate their knowledge to consumers and specialized audiences in the healthcare system and the formulation industry. The programme will develop graduates for a career across different sectors ranging from pharmaceutical, personal care, nutraceuticals

and other innovation, formulation and processing industries in different roles that include entrepreneurship.

Students will study 120 credits at all levels of the programme. In the first year of the degree (level 4), the modules are designed to ensure that students have the foundation in formulation and biological sciences required for further study.

At Stage 1, students will study application of the basics of preformulations to understand the physicochemical properties of pharmaceutical and cosmetic formulation ingredients. This will be coupled with an introduction to human physiology, biochemistry, and microbiology. Laboratory sessions will integrate the theoretical aspects covered in different modules which will provide the opportunity for students to enhance their understanding of particular study topics. Students will be introduced to basic laboratory skills and skills for data handling and interpretation. Students will be engaged with research-informed group work, presentations and application exercises during this stage. Students will also develop key transferable skills including problem-solving and autonomous study skills and will start to build a progress file. Students will be supported to develop a reflective attitude to learning, to develop entrepreneurship, numerical, data analysis and artificial intelligence skills, and to improve their organization, time-management, written and oral communication, and IT and group working skills. At this stage awareness will be raised about the significance of inclusivity and sustainability to address current global challenges. Students will have opportunities for discussion on sustainability concepts and facts, which will be used in the development of content (blog) writing and reflection on inclusivity values, communication styles, beliefs, and practices.

At Stage 2, the curriculum continues to focus on core areas of pharmaceutical and cosmetic science. Students are introduced to the application of preformulation knowledge for development of formulations, particularly liquid, semi-solid and solid state formulations and technologies for their manufacture. Cosmetic formulations, especially for application to skin, hair, and eyes, and dental cosmetics, are also introduced. Stage 2, modules develop students' knowledge of marketing management and strategy in a digital age and sustainable product development. In the Marketing Management and Strategy in a Digital Age module, students will develop an understanding of the role of strategic marketing and marketing planning for corporate success in today's digital era. The Sustainable Product Development module will focus on formulations with a low carbon footprint, green processing technologies, and environmental working group (EWG) scores for personal care products, herbal ingredients and their variability, analysis, sustainability and regulatory guidelines. This module makes use of the School's world-leading expertise in Team-Based Learning (TBL). This helps to develop teamwork, communication and problem-solving skills and critical thinking. Integrated laboratory sessions provide the opportunity to enhance understanding of topics studied in theory. At Stage 2, students develop their depth of knowledge and laboratory and data handling skills and are encouraged to continue to develop autonomy in their learning by producing research-informed individual and group work and developing increasing responsibility for achieving the learning outcomes of their modules and level of study. Stage 2 also introduces digital interventions such as block-chain technology for source tracking and applications of artificial intelligence in health and personal care sectors. Students are encouraged to self-evaluate their skills and identify and address areas for improvement. Students will have opportunities for research-informed

discussion, debate on sustainable development goals in the context of healthcare and personal care formulations and enhancing the assimilation of ideas which can be disseminated as a podcast. Students will also reflect on inclusive and sustainable formulations (cruelty-free cosmetics, Halal and Kosher certified formulations, plant-based cosmetics).

At Stage 3 (the final year of study) the curriculum supports students to further develop their knowledge and understanding of formulation and manufacturing technologies, quality assurance, pharmaceutical and cosmetic product development, national and international pharmacopoeias and advanced manufacturing technologies, including 3D printing and electrospinning. The module 'Advanced Formulation Development and Manufacturing Technology' links well to previous modules, enabling an understanding of the complete journey from preformulation, formulation development, manufacturing to final product sustainable packaging. To continue this journey, students study modules including Entrepreneurship and Innovation: From Concept to Consumer and Sustainable Packaging and Regulatory Affairs. Students gain an understanding of the innovation to market journey and further develop their knowledge in packaging of products, how packaging is approached differently in pharmaceutical and personal care markets and regulatory affairs concerning these sectors. Students' teamwork, leadership, critical thinking, and problem-solving skills are further sharpened through the use of Team Based Learning in the Sustainable Packaging and Regulatory affairs module. In addition, students design and conduct an individual research project in the field of pharmaceutical and cosmetic science, drawing on concepts, methods and techniques at the forefront of the discipline and develop further their numerical, critical reviewing, written and oral communication, particularly disseminating research outcomes to the lay audience through a '3 minute elevator' pitch. Students will be expected to take increasing responsibility for their own learning as well as group and individual outcomes. Students will also reflect on EDI in practice with Vegan compliant cosmetics, unisex cosmetics and substitutes of gelatine in pharmaceuticals. Throughout the curriculum students will have the opportunity to develop the skills associated with laboratory practice including the ability to undertake COSHH and risk assessments and procedures to ensure compliance, and the importance of quality control and quality assurance.

There is significant involvement of different stakeholders in the delivery of the programme including companies, regulatory experts, and professional associations such as Cosmetic Cluster UK. At Stages 2 and 3 there will be provision of at least two guest lectures per year on 'pharmaceutical/nutraceutical/personal care product development and manufacturing technologies'. The integrated laboratories each year will be supplemented by at least one 'Company to Classroom' session where a company expert will present online the formulation, development or manufacturing, from the company floor, explaining pilot or commercial scale operations. This approach will provide students with the opportunity to

interact with the experts, stimulate their critical thinking, and provide opportunity to develop sustainability concepts and employability skills.

Stage 1

FHEQ Level	Module Title	Core/Option	Credit	Study Period	Module Code
4	Pharmaceutical and Cosmetic Preformulation	Core	40	ACYR	PHA4013-D
4	Human Physiology, Biochemistry and Microbiology	Core	40	AYCR	PHA4014-D
4	Integrated Laboratory and Skills Development 1	Core	40	ACYR	PHA4015-D

At the end of stage 1, students will be eligible to exit with the award of Certificate of Higher Education if they have successfully completed at least 120 credits and achieved the award learning outcomes.

Stage 2

FHEQ Level	Module Title	Core/Option	Credit	Study Period	Module Code
5	Fundamentals of Formulation Development and Manufacturing Technology	Core	40	ACYR	PHA5016-D
5	Sustainable Product Development	Core	20	Sem 2	PHA5017-B
5	Marketing Management and Strategy in a Digital Age	Core	20	Sem 1	MAR5011-B
5	Integrated Laboratory and Skills Development 2	Core	40	ACYR	PHA5018-D

At the end of stage 2, students will be eligible to exit with the award of Diploma of Higher Education if they have successfully completed at least 240 credits and achieved the award learning outcomes.

Placement: This programme provides the option for students to undertake a work placement between Stages 2 and 3. Students wishing to take this option will be registered for the 4-year programme. Students registered on the 4-year programme who successfully progress to Stage 3 by achieving 120 credits at first attempt at the Stage 2 Board of Examiners, will be eligible to take a placement. Students who progress to Stage 3 but have a referral in one or more modules will not be able to go on a placement.

FHEQ Level	Module Title	Core/Option	Credits	Study Period	Module Code
5	Placement (Pharmaceutical and Cosmetic Science)	Option	0	FLYR between years 2 and 3	PHA5019-Z

On successful completion of the Placement module PHA5019-Z, students will be eligible for the award of University Diploma in Industrial Studies.

Stage 3

FHEQ Level	Module Title	Core/Option	Credits	Study Period	Module Code
6	Advanced Formulation Development and Manufacturing Technology	Core	40	ACYR	PHA6022-D
6	Entrepreneurship and Innovation: From Concept to Consumer	Core	20	Sem 1	PHA6023-B
6	Sustainable Packaging and Regulatory Affairs	Core	20	Sem 2	PHA6024-B
6	Integrated Laboratory, Research Project and Skills Development	Core	40	AYCR	PHA6025-D

Students will be eligible to exit with the award of Ordinary Degree of Bachelor if they have successfully completed 120 credits in both Level 4 and 5 and 60 credits at level 6 and achieved the award learning outcomes.

Students will be eligible for the award of Honours Degree of Bachelor if they have successfully completed at least 360 credits and achieved the award learning outcomes.

Placement

This programme provides the option for students to undertake a competitive work placement (0 credit module) between Stages 2 and 3. Students will be supported with two career and placement guidance workshops during each stage. The placement provides valuable experiential learning in the pharmaceutical, nutraceutical, personal care or other formulation and processing industries. It will enable students to develop autonomy and initiative, and work effectively as a member of a professional team. While student placement work is directed by their workplace supervisor, the academic Placement Tutor from University will be in regular contact with students during their placement year. Not only will the placement improve students' understanding of final year material, but it may also significantly enhance employment opportunities after graduation. Student performance during the placement will be evidenced by: a Placement Report, a

Presentation and the workplace Supervisor's Assessment report. Students wishing to take this option will be registered for the 4year programme.

Learning and Teaching Strategy

Students will develop the knowledge, understanding and skills necessary to meet the learning outcomes of the modules through the programme's learning and teaching strategy. Students are supported to demonstrate greater autonomy in their learning as they progress through the programme. A variety of teaching and learning opportunities are used to address programme learning outcomes.

Diagnostic activities will take place at the beginning of the programme to help identify areas of strength and those that need development. Students will be able to access tailored support through drop-in clinics to develop their foundational skills in biology, chemistry and laboratory practices. Where appropriate students will also be signposted to Academic Skills or the Language Centre for further support.

Students' knowledge, understanding and discipline skills are developed through lectures, Team-Based Learning (TBL), 'Company to Classroom' sessions, practicals, workshops, online quizzes, simulations, external visits and computer-assisted and self-directed learning, case studies, content writing (blogs), podcasts, video CV, elevator pitch and Dragons' Den presentations. Within the core curriculum of the integrated laboratory and skills development modules, which span the whole of each stage, students will develop their laboratory skills and build professional and transferrable capabilities in self-directed learning and reflective practice in preparation for lifelong learning. Where appropriate, students' learning will be supported through integrated digital resources enabling students to learn in a flexible and independent way.

Personal and professional development, including academic skills, the 17 sustainable development goals (<https://sdgs.un.org/goals>, in particular, 3. Good health and wellbeing, 4. Quality education, 8. Decent work and economic growth, 9. Industry, innovation and infrastructure and 12. Responsible consumption and production), entrepreneurship, EDI in practice, digital advances (artificial intelligence) are key themes throughout the programme to enable students to build on essential transferable skills (communication to specialist and general audiences, teamwork, time management, consumer behaviour, maths, statistics, data analytics) for graduate employment or further study. Students will be taught how to identify their own learning needs, and to utilise skills assessment strategies and action planning to support the development of their personal transferable skills.

There will be two career development workshops per stage to create awareness of employer needs and opportunities.

Assessment Strategy

The assessment strategy is designed to allow students to demonstrate achievement of the learning outcomes of individual modules appropriate to the level of study. At level 4, students will be examined, primarily, on breadth of knowledge and problem- solving skills. The coursework assignments and group task will provide an opportunity to demonstrate

understanding and application of core principles, problem-solving skills, report writing, data handling and interpretation, group work and time management. At this stage, students undertake one end of year exam (biology).

As students progress through levels 5 and 6 they will have the opportunity to demonstrate increasing skills of analysis, synthesis and criticism through a wide variety of assessment strategies. The research project report (dissertation) and elevator pitch presentation with peer assessment provides a key opportunity to demonstrate autonomy in data handling and critical interpretation in a research context.

Formative assessments are embedded throughout the programme to allow students to become familiar with new types of assessment and to reflect on their own progress. Formative assessments will often be delivered as ongoing, in-class assessments using a variety of different methods as opposed to being formal examinations;

Classroom tests (individual and team-readiness assurance tests) allow students to work independently as well as in teams. The integrated lab sessions in small groups provide an opportunity for students to hone their practical skills and consolidate knowledge of underpinning theoretical principles alongside a tutor and peers in a formative setting, in preparation for the spot viva.

Assessment Regulations

This Programme conforms to the standard University Undergraduate Assessment Regulations which are available at the following link:

<https://www.bradford.ac.uk/regulations>

Admission Requirements

We take into consideration a number of factors when assessing your application. It's not just about your grades; we take the time to understand your personal circumstances and make decisions based on your potential to thrive at university and beyond. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The **minimum** entry requirements for the programme are as follows:

- A level: 112 UCAS points (equivalent to BBC). Please note that where a science A Level is taken, the University will require applicants to pass the practical element (for A levels awarded from August 2017 onwards).

Required subjects:

- A Level two sciences of which one should be Biology or Chemistry at grade B or above. The third A level can be in any subject excluding General Studies and Critical Thinking.
- Under the points systems introduced in 2017, AS levels will be worth 40% of an A level.

- All GCSE passes must be to at least C grade (grade 4) and must include English Language, two Sciences, and Mathematics or equivalent at grade C (grade 4) or above.
- International students should have IELTS: 6.0 overall, with at least 5.5 in each component, and have equivalent qualifications to GCSE Grade C or 4 in Science and Mathematics. For other English language qualifications see Bradford English requirements.
- If you do not meet the IELTS requirement, you can take a University of Bradford pre-session English course. See the Language Centre for more details. For further information on English Language requirements please see the dedicated international entry requirements page.
- International Baccalaureate requirements: 112 UCAS tariff points to include either HL Chemistry or Biology at Grade 6 and 1 other HL Science subject, plus HL 3 or SL 4 in Mathematics and English Language and Literature A or English B.

Other qualifications:

- Applicants on Access Programmes: 112 UCAS tariff points from an Access to Higher Education Diploma – Science subject required. Must include a minimum of 12 credits of Biology or Chemistry at Distinction. BTEC Extended Diploma: Applied Science - DMM in a relevant science to include at least 4 units of Chemistry or Biology at Merit.
- Plus minimum of: GCSE English Language, Mathematics and two Sciences at grade C or 4 (equivalents accepted).
- Progression requirements for degree programme:

International Foundation entry requirements: if you are an international student and do not meet the entry requirements for direct entry onto this course, you may be interested in our International College.

An overall average of at least 55% and at least 55% in Chemistry, Biology and Applied Life Sciences plus the equivalent of IELTS 6.0 (5.5) in the final English module.

If you do not meet the entry requirements for this course, our Foundation Year has a route to Pharmaceutical and Cosmetic Science.

Transfers will be considered from the BSc Clinical Sciences with Integrated Foundation Year subject to passing the Foundation Year with at least 55% overall and passing all modules.

Foundation Years from other universities may be accepted at 55% or above, please refer to the Admissions team for further information.

- Advanced entry: Applications for advanced entry will not be considered for this programme.
- Students with a range of alternative UK and international qualifications, including combinations of qualifications will be encouraged to apply to the programme.

Applications are welcome from students with non-standard qualifications or mature students (those over 21 years of age on entry) with significant relevant experience.

The UCAS **tariff** applicable may vary and is published here [UCAS Tariff Points - Calculate Your Entry Requirements](#)

Please note: This link provides admission information relevant to the current recruitment cycle and therefore may be different to when this document was originally published.

Recognition of Prior Learning

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme.

Minor Modification Schedule

Version Number	Brief description of Modification	Date of Approval (Faculty Board)
1	Annual update for 2023/24 academic year	July 2023