Cogent skills
for science industries

Modular Masters in Formulation Science and Technology

CPD for professionals in Formulation Science

Endorsed by the Science Industry Partnership
SIP

Modular Masters in Formulation Science and Technology

Introduction

Traditionally, organisations have found it a challenge to develop employees with the right skill set for scientific, technical and production functions at all levels, from vocational to professional in formulation science and technology.

In response, the Science Industry Partnership (SIP) has developed a Modular Masters programme in Formulation Science and Technology to provide specialist Continuing Professional Development (CPD) that can build into a full Masters upon completion of 180 credits of learning. This will provide individuals with the specialist knowledge that employers seek. The Modular Masters has been designed to be flexible in order to meet the needs of individuals in formulating industries.

Features of the Modular Masters

The Modular Masters is suitable for employees in all industries engaged in some aspect of formulation or seeking to enhance their knowledge of formulation.

In this innovative programme modules can be studied individually as CPD or counted towards a postgraduate certificate (60 credits), diploma (120 credits) or a full Masters qualification on completion of a project (180 credits).

Modules are worth 10 (or occasionally 20) credits and fall into two categories:

- **Core modules** cover fundamental scientific and technological topics broadly relevant to all industries.
- **Specialised modules** cover topics mainly of relevance to single industries, or address specialised technological themes.

Depending on industry demand and needs, further specialised modules will be added to the programme over time.

Learners wishing to study for the full Masters should choose at least 40 credits worth of modules from the Core category. The remainder of modules may be chosen from either the Core or Specialised categories.

Those wishing to pursue CPD only (i.e. without a formal qualification) may choose freely from the full selection of modules.

For the full masters:

Core Modules

Fundamental science and technology relevant to all industries.

At least 40 credits

Specialised Modules

Specialised technological themes or topics relevant to single industries

Modules worth 80 credits chosen freely from Core or Specialised modules

Research Project

Tailored to needs of the business

60 credits

180 credits for the full Masters

Benefits of the Modular Masters

The Modular Masters is an ideal opportunity for employees to develop their skills in all aspects of Formulation Science and Technology

The Modular Masters programme focuses on developing those skills in formulation which employers have identified as being critical to driving innovation, productivity and growth.

- Suitable for a wide range of participants including graduates, experienced senior technicians or PhD scientists
- Suitable for all industries engaged in formulation
- Improve capability, motivation and retention of employees
- Apply science and technology to solve real-world problems
- Learn to apply techniques from outside your own industry
- Unique flexible tailor-made programme
  – Senior Tutor works with employer and employee to design a study pathway to meet your needs
- Choose the depth of study to suit your needs:
  – Study one or more modules as CPD only or
  – Accumulate credits to form a full Masters or intermediate qualification.
- Delivery from a consortium of the UK's leading Universities:
  – Choose modules flexibly from one or more of the Universities in the consortium
- Flexible study via in-person, distance or e-learning
- Research project carried out in the workplace to apply the knowledge learned to real-life challenges
- Simplified "one stop" administration via Cogent Skills

Length and Structure

Those wishing to study solely for CPD can choose any module at any time and may choose whether to take a formal assessment.

For those working towards a formal academic qualification there are the following options:

- **Postgraduate Certificate**
  60 credits from taught modules
- **Postgraduate Diploma**
  120 credits from taught modules
- **Masters qualification**
  180 credits for the full Masters composed of 120 credits from a range of modules and 60 credits from a research project.

Typically a learner will take three to five years of part-time study to complete the full Masters but the learner and the employer are free to choose the pace of study and the choice of modules in conjunction with the Senior Tutor for the programme.

Study

As a guideline, a module comprising 10 credits will require learner "contact time" (lectures and tutorials or the online equivalent) of about 25 hours and "non-contact time" (reading, self-study and assignments) of approximately a further 75 hours. It is for the employer to decide how much contact and non-contact time will be within the learner's working hours and how much will be in the learner's own time.

Learners can choose modules from one or more of the Universities in the Modular Masters consortium. All of the modules are available as in-person courses delivered at the University in question. Many of the modules are also available in distance learning or e-learning format, which provides the learner with an extra degree of flexibility.

Depending on industrial demand it is expected that an optional annual summer school will be held to bring learners from different industries and locations together with teachers from the different universities.

Academic assessment for each module will be carried out using a combination of methods including examination, course work, written assignment and presentations.

Industry Governance and Guidance

The Modular Masters in Formulation Science and Technology is delivered by a consortium of leading Universities, led by the Centre for Formulation Engineering at the University of Birmingham.

In conjunction with the Science Industry Partnership the Modular Masters programme is guided by an advisory board consisting of industrialists from companies engaged in formulation. These industrialists have been involved in the design of the programme from its conception and continue to offer guidance and governance to ensure that it evolves to meet the changing needs of industry.

Costs

Fees per 10 credit module are in the region of **£770**

The overall cost for the full Masters programme will be in the region of **£11,000**

Funding

Employers may be able to benefit from funding support available from the Science Industry Partnership (SIP). Through the SIP up to **50%** funding is available per single module. For further information or details of how to benefit from this initiative please e-mail HEOperations@cogentskills.com or visit **www.scienceindustrypartnership.com/workforce-development.**

Modules Available

The modules in the table below are currently available.

Those wishing to pursue the full Masters are not obliged to sign up immediately for all of their chosen modules. Instead they may register initially for one or more individual modules and at a later date register for the full Masters programme. Cogent Skills can advise learners and employers on possible pathways and the initial choice of modules. The Senior Tutor for the programme will agree the final choice of modules together with employer and learner for those pursuing an academic qualification.

Any module may also be taken as CPD by learners not wishing to pursue a formal qualification.

Full descriptions of each module are available from Cogent Skills, HEOperations@cogentskills.com or **www.cogentskills.com/workforce-development/modular-masters/**

Core Modules

Module Title	University	Credits	Learning Mode	Date(s)
Process Engineering Fundamentals for Formulators	University of Birmingham (Formulation Engineering)	10	In-person (one week) E-Learning	12th Oct 2015
Bioscience for Formulators	University of Birmingham (Formulation Engineering)	10	In-person (one week) E-Learning	5th Oct 2015
Industrial Chemistry	Imperial College London	10	In-person (3h/wk, 1 term) E-learning	Autumn 2015
Formulation Chemistry and Engineering	Imperial College London	10	In-person (10x 1/2 day) E-learning	October 2015 (tbc)
Characterisation for Formulation	University of Birmingham (Formulation Engineering)	10	In-person (three days)	14th Mar 2016
Product Characterisation	Imperial College London	10	In-person (10x 1/2 day) E-learning	Spring 2016

Module Title	University	Credits	Learning Mode	Date(s)
Particle Characterisation	University of Leeds	10	In-person (one week)	May 2016 (tbc)
Introduction to Colloid Science	Imperial College London	10	In-person (10x 1/2 day) E-learning	Spring 2016
Colloid Chemistry and Rheology	University of Birmingham (Formulation Engineering)	20	In-person (one week) Distance/e-learning	9th Nov 2015
Mathematical Modelling of Time-Dependent Processes	University of Birmingham (Formulation Engineering)	10	In-person (one week) Distance/e-learning	Summer 2016
Design of Experiments and Multivariate Data Analysis	University of Leeds	10	In-person (one week) Distance/e-learning	October 2015
Product Design	University of Birmingham (Formulation Engineering)	10	In-person (one week)	Summer 2016
Molecular Delivery for Formulation	University of Birmingham (Formulation Engineering)	10	In-person (one week) Distance/e-learning	2nd Nov 2015

Specialised Modules

Module Title	University	Credits	Learning Mode	Date(s)
Principles of Drug Delivery and Disposition	King's College London	10	In person	Spring 2016 (tbc)
Pharmaceutical Pre-formulation and Formulation	University of Birmingham (Pharmaceutical Sci)	10	In-person (four days) E-learning	Autumn 2015
Formulation of Pharmaceutical Drug Products	University of Birmingham (Pharmaceutical Sci)	10	In-person (one week)	Spring 2016
Food Formulation and The Consumer	University of Birmingham (Formulation Engineering)	10	In-person (one week) Distance/e-learning	15th Feb 2016
Developing Food Structure Through Thermal Processing	University of Birmingham (Formulation Engineering)	10	In-person (one week) Distance/e-learning	1st Feb 2016
Particle Engineering	Imperial College London	10	In-person (10x 1/2 day) E-learning	Spring 2016
Advanced Pharmaceutical Formulation	University of Birmingham (Pharmaceutical Sci)	10	In-person (one week)	Spring 2016
Spray Drying of Formulated Products	University of Leeds	10	In-person	Spring 2016
Emulsion Technology and Microencapsulation	University of Leeds	10	In-person	September 2015
Rheology of Suspensions and Dispersions	University of Leeds	10	In-person (two days)	12-13th June 2015
Non-Aqueous Colloids	University of Leeds	10	In-person (two days)	June 2016
Drug Delivery: Liquid Dosage Forms and Microbiology	King's College London	10	In person	Spring 2016 (tbc)
Drug Delivery: Solid Dosage Forms	King's College London	10	In person	Spring 2016 (tbc)
Pharmaceutical Process Development	Imperial College London	10	In-person (10x 1/2 day) E-learning	Autumn 2016
Membrane Science and Membrane Separation Processes	Imperial College London	10	In-person (10x 1/2 day) E-learning	Autumn 2016

Research Project

Learners wishing to complete the full Masters will be required to complete a research project that is tailored to the needs of the business and demonstrates the learning gained during the taught part of the programme

The project will be supervised and assessed (by dissertation) by a participating University. The subject matter of the project will be agreed between the employer, the learner and the academic supervisor. Typically the project will take place in the workplace and be an extension of the learner's day to day work, e.g. by applying new methods or developing new scientific insight. If required by the employer, agreements to protect the employer's confidentiality and IP in respect of the project can be put in place with the University.

Example Module Pathways

Whilst some modules are suitable for learners in all industries, there are some more specialised modules which are applicable to specific industries.

The table below demonstrates which modules are suited best for particular industries. The table is illustrative rather than prescriptive.

Additional specialised modules may be added in response to employer demand to provide deeper industry coverage.

Title	Pharma	Home / Personal Care	AgChem	Food / Drink	Paints / Inks	Lubricants
Core Modules						
Process Engineering Fundamentals for Formulators	?	?	✓	✓	✓	✓
Bioscience for Formulators	✓	✓	✓	✓	?	?
Industrial Chemistry	?	✓	?	?	✓	✓
Formulation Chemistry and Engineering	?	✓	✓	✓	✓	✓
Characterisation for Formulation	✓	✓	✓	✓	✓	✓
Product Characterisation	✓	✓	✓	✓	✓	✓
Particle Characterisation	✓	✓	✓	✓	✓	✓
Introduction to Colloid Science	✓	✓	✓	✓	✓	✓
Colloid Chemistry and Rheology	✓	✓	✓	✓	✓	✓
Mathematical Modelling of Time-Dependent Processes	?	?	✓	✓	?	✓
Design of Experiments and Multivariate Data Analysis	✓	✓	✓	✓	✓	✓
Product Design	✓	✓	✓	✓	✓	✓
Molecular Delivery for Formulation	✓	✓	✓	✓	?	?
Specialised Modules						
Principles of Drug Delivery and Disposition	✓	?	✓	?	✗	✗
Pharmaceutical Pre-formulation and Formulation	✓	✗	?	?	✗	✗
Formulation of Pharmaceutical Drug Products	✓	?	?	?	✗	✗
Food Formulation and The Consumer	?	?	?	✓	✗	✗
Developing Food Structure Through Thermal Processing	?	?	?	✓	✗	✗
Particle Engineering	✓	✗	✓	✓	✓	✓
Advanced Pharmaceutical Formulation	✓	✗	✗	✗	✗	✗
Spray Drying of Formulated Products	✓	✗	✓	✓	?	?
Emulsion Technology and Microencapsulation	✓	✓	✓	✓	✓	✓
Rheology of Suspensions and Dispersions	✓	✓	✓	✓	✓	✓
Non-Aqueous Colloids	?	?	✓	?	✓	✓
Drug Delivery: Liquid Dosage Forms and Microbiology	✓	?	?	?	✗	✗
Drug Delivery: Solid Dosage Forms	✓	✗	?	?	✗	✗
Pharmaceutical Process Development	✓	✗	?	✗	✗	✗
Membrane Science & Membrane Separation Processes	?	?	?	✓	?	?

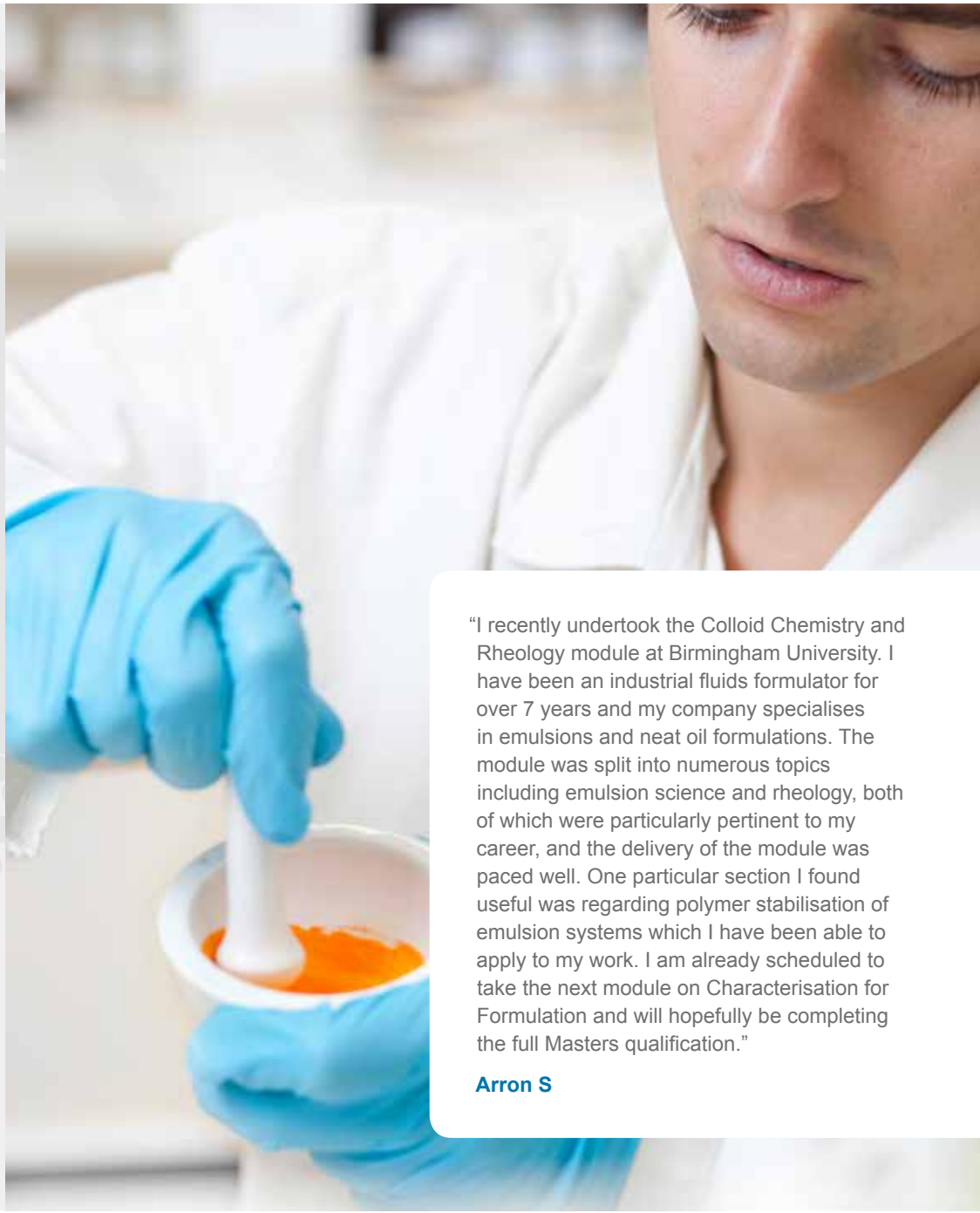
✓ Likely to be suitable for that industry

? May be suitable depending on student/employer interest

✗ Unlikely to be suitable

Apply

1. If you are interested in the Modular Masters, email **HEOperations@cogentskills.com**
2. You will then be provided with a Module Booking Form, which confirms your requirements.
3. Learners will be required to complete a university application. Cogent Skills will forward the relevant documentation and guidance notes once the Module Booking Form has been completed and returned.
4. Once the learner has been accepted onto the module and payment details received, Cogent Skills will send out module joining instructions.



"I recently undertook the Colloid Chemistry and Rheology module at Birmingham University. I have been an industrial fluids formulator for over 7 years and my company specialises in emulsions and neat oil formulations. The module was split into numerous topics including emulsion science and rheology, both of which were particularly pertinent to my career, and the delivery of the module was paced well. One particular section I found useful was regarding polymer stabilisation of emulsion systems which I have been able to apply to my work. I am already scheduled to take the next module on Characterisation for Formulation and will hopefully be completing the full Masters qualification."

Arron S

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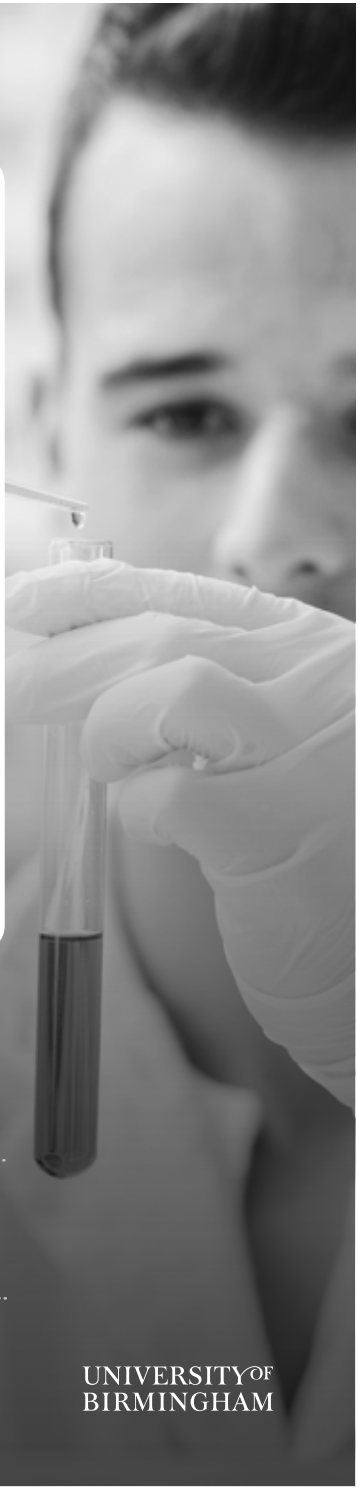

"Formulation science is essential in the pharmaceutical industry, with formulators involved at every stage from the discovery phase of new medicines to commercialisation.

What the Modular Masters is going to offer is unique in a number of ways: the diversity of topics covered within the programme, the quality of the teaching providers, the flexibility of the modular course structure and the learning styles, such as distance learning.

With the increasing competition in the sector around the world, it's important for the UK to develop and grow its expertise in the key area of formulation.

The Modular Masters fills the gap for modular courses covering these skills which will meet a growing need for both Pfizer and the pharmaceutical sector in general."

Richard Green - Senior Director, Drug Product Design, Pfizer R&D

If you would like more information about the Modular Masters in Formulation Science and Technology please contact:

HEOperations@cogentskills.com
01925 515 200

www.cogentskills.com/workforce-development/modular-masters

@cogent_skills

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