	Basic Course Information	
1	Awarding Institution:	Nottingham Trent University.
2	School/Campus:	School of Science and Technology/ Clifton campus
3	Final Award, Course Title and Modes of Study:	FdSc Chemistry FT
4	Normal Duration:	2 Years FT
5	UCAS code:	F193

6 **Overview and general educational aims of the course**

The FdSc course in Chemistry provides an education to stimulate enthusiasm for chemistry and to develop key transferable scientific skills enabling the application of chemistry and related topics in society, to the world of work and as part of life-long learning. Through practical applications of theoretical knowledge, you will acquire the skills and attributes expected by employers or for further study.

Entrants are normally mature students returning to education, students who have not performed to their full potential at A level, but who wish to continue their study of chemistry in higher education or BTEC students. If you perform well in your first year then you will be offered the opportunity to fast-track onto the second year of any of the MChem/BSc Chemistry based degrees in the UG Cluster.

Upon successful completion of the FdSc, you can join the BSc Chemical Sciences top-up route that gives you the opportunity to obtain an honours degree after a further year of study. If you perform well in the second year of study you can request transfer to the third year of BSc Chemistry based degrees in the UG cluster.

The FdSc course is an applied chemistry course that aims to make you numerate, articulate and employable.

Chemistry at NTU provides you with a solid grounding in core areas of iorganic, organic and physical chemistry. A special feature of our courses is that we offer you hands-on experience of analytical techniques and instruments from year 1. We include material from our specialisms in areas such as medicinal chemistry, materials, chemical technology, environmental science and computational chemistry. We offer you high quality, modern facilities for practical work and lectures. Practical work forms a large proportion of learning to ensure that you have extensive skills for employment or research. We work closely with industry to ensure you develop skills that employers are looking for.

The course aims to:

- Provide you will a stimulating educational experience through the studying, learning and application of chemistry
- Enable you to develop both your theoretical knowledge and practical skills in chemistry
- Encourage and assist you to realise your full academic potential, whatever your previous academic background and to enhance your employment and career opportunities

- Promote your ability to work logically and critically in problem solving;
- Foster in you a professional approach to safe working practices and environmental issues;
- Facilitate the development of your scientific and transferable skills through work related activities;
- Generate a supportive environment in terms of both the pastoral and academic aspects of university life;
- Show you the importance of the chemical sciences in an industrial, academic, economic, environmental and social context;
- Prepare you for study at honours degree level and for life-long learning.

7 **Course outcomes**

Course outcomes describe what you should know and be able to do by the end of your course if you take advantage of the opportunities for learning that we provide.

Knowledge and understanding. By the end of the course you should be able to:

K1. Demonstrate knowledge and understanding of essential terminology, facts concepts, principles and theories of chemistry and related topics.
K2. Execute an experiment or investigation in a safe and reliable manner, record the data professionally, analyse the results and draw valid conclusions -recognising the limits of the data produced.
K3. Recognise and analyse both qualitative and quantitative problems, and plan strategies for their solution, applying enterprise and creativity, where necessary.
K4. Operate standard chemical instrumentation and carry out standard laboratory procedures in synthesis, measurement and analysis.
K5. Find, manage and process information and data and present your findings clearly and correctly in a written or oral format suitable for one of a range of audiences.
K6. Acquire, interpret and analyse chemical information from a variety of sources to suggest solutions to problems and issues affecting industry and society including aspects of ethics, environmental impact and sustainability.
K7. Demonstrate awareness of some key issues related in chemical related industries and to be able to identify and evidence attributes suitable for employment in such industries.

Skills, qualities and attributes. By the end of the course you should be able to:

S1 Analyse, interpret and evaluate data and information retrieved from a variety of sources; giving and receiving feedback effectively including judgement of own efficacy.
S2 Show skills in the carrying out of a range of practical procedures and using instrumentation safely and to a professional standard.
S3 Demonstrate good written and oral communication skills, presenting material effectively in range of formats and media
S4 Use appropriate software packages and IT systems to analyse data, model systems and retrieve information.
S5 Prioritise, plan and implement efficient and effective modes of

working using time management and organisational skills
S6 Work on your own in an independent manner, or with others as part of a team.
S7 Manage your own learning and make use of appropriate texts, information sources and other resources.
S8 Develop a portfolio to showcase your development of a range of chemistry related competencies, and your academic and employability skills

All of the above learning outcomes K 1-7 and S1-8 support Chemistry Benchmark Statements QAA 2014

8 **Learning and Teaching Methods**

The teaching and learning strategies for this course have been developed to support the acquisition of the knowledge, understanding and skills expected of a professional chemist, and have evolved over a number of years as a result of feedback, review and reflection. Autonomous learning is encouraged and motivated within the course through the following practices:

- Interaction with other students through working in small groups.
- Presentation of concepts and findings to fellow students and tutors: this will help you to organise your thoughts and develop your understanding.
- You will undertake both self-directed and staff-directed investigation to help you develop your independent learning and autonomy
- The application of the knowledge that you have gained within modules to solving problems and examining case studies
- The careful progression between the levels in the course ensures that you build upon and develop earlier knowledge and skills.

You are expected to take more responsibility for your own learning as you progress through each level. This can be seen particularly clearly within the laboratory programme, with experiment scripts becoming less prescriptive and the investigations more open-ended from one level to the next.

Course delivery is supported by strategies that encourage the student to consolidate and apply their knowledge. In order to realise the course aims, the following practices are adopted:

- *Lectures* are used to introduce and develop concepts, with fundamental physical laws being covered to a greater depth at each level, and their application explored.
- *Directed reading* is used to supplement the concept development initiated through the lectures.
- *Laboratory work* develops hands-on practical skills, problem solving and data collection. It also underpins the lectures and directed reading.
- *Workshops* are used to consolidate the application of knowledge and concepts: sometimes these are integrated with the lectures.
- *Mathematical skills* that students acquire in their first year are applied in subsequent modules and Lab sessions in order to deepen their understanding of the theoretical underpinning of core modules, solve problems and to build skills in analysis, interpretation and evaluation of practical results
- *Small projects* in various modules help students to learn how to plan and execute investigative work.
- T*he FdSc Chemistry Employer Liaison Group* supported the course team in the design and development of the course, and in formulating and the ongoing assessment of applied module tasks.
- A 40cp *Industrial Practice* module includes a compulsory work experience

element based on 'Live' projects offered by employers of who would also be involved in assessment of their personal skills as a professional chemist.
- *Embedded Employability* sessions within workshops and their associated assessments improve their capability in developing a portfolio to showcase their Chemistry, academic study & employability-related competences.

All modules have a site on NOW, the Nottingham Trent University Online Workspace. NOW provides important information on each module, such as the syllabus, teaching schedule and assessment plan. Most module sites also store lecture notes and past examination papers, and provide links to other internet sites which are useful for that particular module. NOW also has a site that provides information at course level, such as notices and electronic versions of course handbooks, etc.

9 **Assessment Methods**

Most modules are assessed by both examinations/tests and some form of coursework. Normally the balance of assessment in modules on the course is 60% coursework and 40% examination at Level 4; 50% coursework and 50% examination at Level 5, but assessment strategies used within a particular module are chosen to be the most appropriate for that aspect of study.

The course utilises a variety of assessment methods to enable you to demonstrate your achievement of the learning outcomes. Often two or more different types of assessment are grouped together under a general heading, e.g. a "Portfolio" may include a range of tasks designed to demonstrate the acquisition of numerous skills.

Listed below are the main types of assessment that a student will experience on the FdSc Chemistry course:

a) *Formal Laboratory Report* - Assesses a student's ability to carry out a laboratory experiment and report on the findings in a scientific manner, discussing assumptions, error analysis, conclusions, etc.

b) *Laboratory Notebook Entry* - Encourages the student to produce a contemporaneous record of laboratory activities, with suitable graphs, tables, sample weights etc. A subset of the laboratory practicals are selected to become the formal laboratory report in a module.

c) *Formal Examination* - Used to assess a student's knowledge base and ability to integrate material under time constraints. Some FdSc exams are revealed papers, others are traditional closed-book papers.

d) *Oral Presentation* - Assesses a student's oral communication skills and presentation skills using PowerPoint. Some of these are individual talks, whilst others are group presentations.

e) Problem Based Assignment - Assesses a student's ability to apply chemical, mathematical and computational techniques to problems in chemistry.

f) *Class Tests*-Short tests, often taken midway through the year. In some modules, these are either open-book or partially revealed tests. They assess the student's knowledge base under timed conditions, and their timing means they encourage re-enforcement of ideas covered early in modules so that students have a better platform upon which to build

more advanced concepts; furthermore, they can provide the student with valuable experience and feedback in preparation for an end of module exam.

g) *Mini-Projects*- Small projects, often conducted in collaboration with industry, which help the student to apply their learning to real-world scenarios.

h) *Portfolio* - This has several parts and will include a reflection on the skills/competencies developed during the course, and a job application.

There are a number of pieces of work that are not formally assessed but which do form a valuable part of your learning experience. For example, in many modules you will be issued with problem sheets, and you will be expected to tackle these for yourself before the answers are provided, either in class or online. You are expected to fully engage with these activities, as they form an invaluable part of the process of developing you as an autonomous learner. You will also receive a lot of informal formative feedback on a one-to-one basis during laboratory sessions and after oral and poster presentations.

10 **Course structure and curriculum**

Each academic year you will study 120 credit points (cp) of modules:

The structure of the curriculum is outlined below with an indication of the module status (i.e., C = core; O= option). Core modules are compulsory but option strands enable you to choose themes of pharmaceutical, materials or sustainable chemistry.

<u>Level 4 (Year 1)</u>
Introduction to Applied Organic Chemistry (20 cp) (C)
Introduction to Applied Inorganic Chemistry (20 cp) (C)
Introduction to Applied Physical Chemistry (20 cp) (C)
Introduction to Analytical Chemistry (20 cp) (C)
Professional Development Foundation (20 cp) (C)
Introduction to Specialist Areas of Chemistry (20 cp) (C)

<u>Level 5 (Year 2)</u>
Applied Organic Chemistry (20 cp) (C)
Applied Inorganic Chemistry (20 cp) (C)
Applied Physical Chemistry Foundation (20 cp) (C)
Analytical Chemistry (20 cp) (C)
Industrial Practice* (40 cp) (C)

**Incorporates your choice of one from:*
Modern Day Materials (20 cp) (O)
Pharmaceutical Chemistry (20 cp) (O)
Chemical Technology (20 cp) (O)
Applied Instrumental Analysis (20CP) (O)

Your foundation degree mark will be calculated from 20% of your Year 1 grade points plus 80% of your Year 2 grade points. To be awarded an FdSc you must

pass 240 credit points of modules achieving at least a low 3rd grade (grade point 4 or greater) overall. If you achieve a degree grade of a low first or better (grade points 13-16) then you will be awarded an FdSc with distinction. With a grade of between a low 2.1 and high 2.1 (grade points 10-12) you are eligible for an FdSc with commendation.
Students who achieve 120 credit points are eligible for a Higher Certificate in Chemistry, as an interim award, should they leave the course without completing the FdSc.

Students achieving 60% or above (commendation or distinction) at the end of their first year will be offered the opportunity to fast-track on to year 2 of the BSc Chemistry (or related) degree.
Students achieving 60% or above (commendation or distinction) at the end of their second year will be offered the opportunity to transfer to year 3 of the BSc Chemistry (or related) degree.
Students achieving a pass in their foundation degree will be offered the opportunity to transfer to year 3 of the BSc Chemical Sciences (one year top-up) degree.

Level 6 – BSc (Hons) Chemical Sciences
Advanced Chemistry (20cp)
Advanced Chemical Analysis (20cp)
Project (40cp)
One from three of:
Advanced Organic Chemistry (20cp)
Advanced Inorganic Chemistry (20cp)
Advanced Physical Chemistry (20cp)
One from three of:
Chemotherapeutics (20cp)
Nano and Green Technology(20cp)
Communicating Science and Technology (20cp).

Each academic year comprises 30 weeks divided into 3 terms. Typically, teaching and learning takes place for 26 weeks with the final 4 weeks of each year being set aside for examinations. The FdSc Chemistry is awarded for the successful completion of 240 cp, 120 at each of the levels 1 and 2.

11 **Admission to the course**

For current information regarding all entry qualifications for the course please see the 'Applying' tab on the NTU course information web page.

12 **Support for Learning**

We will work with you to ensure that you settle into your new academic environment and that your studies go well, and you will find that there are lots of people to support you at Nottingham Trent University.

All students at Nottingham Trent University have full access to Student Support Services. In addition, School based support networks are in place to offer you support, guidance and advice on academic and personal issues. Within the course, students experience the full support of the Chemistry Academic Team. The Head of Dept, with support from the Academic Experience Manager, Course Leader(s), Module Leader(s), and Personal Tutor, takes responsibility for student support and guidance. The Module Leader will offer guidance and support to students taking each specific module.

Academic staff can be contacted by e-mail, telephone, letter, or in person.

As a new student, you will experience a minimum of a 3 day induction period at the commencement of their first academic year. Induction will inform you about:

- Student Support Services at University, School and Course level;
- University policies and procedures on academic systems;
- Personal development planning;
- Timetable issues, room allocations and location;
- University, School and Course Handbooks;
- Enrolment procedures;
- Computing, IT and Library services;
- Health and Safety procedures.

During your induction, you will be assigned a Personal Tutor and informed about the best way to get in touch with your Course Leader and Module tutors. Every year, you will have regular timetabled sessions with your Personal Tutor, in small groups. Your group tutorials will help you to reflect on your approaches to study and make connections between modules, integrating material from across the curriculum and encouraging you to achieve your maximum potential. You will also have an opportunity to discuss and deal with any personal or course-related issues that may be affecting your studies and get advice on what support the university can offer. Personal tutorials can also be used for personal development planning and skills development.

Student Mentors are also used to provide you with learning support. Student Mentors are typically students at Level 5 and above of their course, who provide some form of mathematics, academic writing or module-specific support. Such support is usually available on a 'help desk' basis.

For accommodation matters, University Accommodation Officers will provide you with information, guidance and continuing support, for example hall of residence, private rented accommodation, and the Landlord Approval Scheme. The Accommodation Services can be accessed through www.ntu.ac.uk

The university has a Virtual Learning Environment called NOW (NottinghamTrent University Online Workspace). General information concerning the curriculum, module specifications, timetables, assessment schedules etc. are available on the course sites, whereas module sites give syllabus details, assessment details and frequency, lecture material. This is an important educational aid whose use is steadily expanding. The Clifton library houses a wide range of chemistry textbooks and provides access to relevant periodicals, many in electronic form. Library and Learning Resources (LLR) staff offer support for your learning needs. Both group and individual sessions are available you to use the library resources to the full.

13 Graduate destinations/ employability

Graduate employability is fundamental to the strategic aims of Nottingham Trent University and this is reflected by our consistantly high standing in the UK University league tables for graduate employment.

There is a wide range of career opportunities relating to chemistry, or further study, which our students enter on completion of the course. Employment opportunities for FdSc graduates in chemistry include providing technical

support to research and development in the UK chemical industry, which comprises some 3,500 companies and is manufacturing's number one exporter for Britain, as well as in international chemical and pharmaceutical companies. A multitude of related areas such as forensic science, bioscience, environmental monitoring and analysis, teaching, marketing, management, computing and accountancy etc. employ people with technical skills gained by studying chemistry. However, the vast majority of students continue their studies and achieve an honours degree before leaving NTU to enter employment.

The School's Employability team helps you find suitable employment. It offers sessions on such topics as interview techniques and filling in application forms as well as having psychometric tests available to see what types of careers suit your personality.

14 Course standards and quality

The course teaching team takes day–to-day responsibility for managing the Chemistry Cluster of courses. The design and delivery of the courses are under the control of the courses Committee. This committee has student representatives on it, who are elected by other students. The role of the student representatives is gather feedback from fellow students write a report and present this to the Courses Committee. Student reps can also bring any concerns of students to the Academic Experience Manager, enabling problems to be dealt with in a timely manner.

A team of External Examiners monitors the standards and quality of the courses. Each External Examiner produces a detailed written annual report; these are considered by the Courses Committee, which uses the reports as one source of evidence when gathering up an action plan for the forthcoming year. Academic staff gather student feedback towards the end of each module and this is reported on in the module leader's report that also discusses all aspects of the delivery of the module for that academic year. The Courses manager on behalf of and with the support of the Courses Committee produces an annual Interim Course Report (ICR). ICRs are informed by numerous sources including External Examiners' reports, module leaders' reports, contributions from individual members of the Chemistry teaching team, progression and achievement statistics, module feedback questionnaires and the National Student Survey (NSS). The ICR is considered at a meeting of the School of Science and Technology's Academic Standards and Quality Committee where any issues arising are noted and the actions taken to alleviate them are reported back. In turn, the ICR informs the annual School Standards and Quality Report (SSQR) which is scrutinised by senior University staff charged with overseeing the maintenance of the institution's high standards of educational provision.

The School operates a peer observation of teaching policy whereby all lecturers are seen regularly in a teaching capacity by other lecturers within their teaching team. Suggestions for improvement are made and other members of staff informed of good practices.

At the design stage of this course the outcomes were aligned to those suggested within the benchmark statements of the Quality Assurance Agency for Higher Education with the help of a panel of current employers.

15 Assessment regulations

This course is subject to the University's Common Assessment Regulations (located in its Academic Standards and Quality Handbook). There are no course-specific assessment features.

16 **Additional Information**

Collaborative partner(s): None

Course referenced to national QAA Benchmark Statements:	The QAA Benchmark descriptors for Chemistry, the Foundation Degree Descriptors in the NTU Quality Handbook and the QAA Foundation Degree Characteristics Statements (September 2015) have informed the design of this course
Course recognised by:	
Date implemented:	September 2018
Any additional information:	