1. Admissions/ Management Information

Title of the new programme – including any year abroad/ in industry variants See guidance on programme titles in Appendix V:
https://www.york.ac.uk/media/staffhome/learningandteaching/documents/policies/Framework%20for%20Programme%20Design%20-%20UG.pdf

Chemistry, Biological and Medicinal Chemistry

Level of qualification

Please select:	Level 6	

Please indicate if the programme is offered with any year abroad / in industry variants	**Year in Industry Please select**	No
	Year AbroadPlease select Y/N	No
This document applies to students who commenced the programme(s) in:	2017-18	

Awarding institution	**Teaching institution**
University of York	University of York

Department(s): Where more than one department is involved, indicate the lead		**Board of Studies**
Lead Department	Chemistry	Chemistry
Other contributing		

Interim awards available Interim awards available on undergraduate programmes (subject to programme regulations) will normally be: Certificate of H

Certificate of Higher Education (Level 4/Certificate), Diploma of Higher Education (Level 5/Intermediate), Ordinary Degree.

UCAS code	**Route code(existing programmes only)**
F152	

Admissions criteria

A-level in Chemistry or equivalent

Length and status of the programme(s) and mode(s) of study

Programme	Length (years)	Status (full-time/part-	Start dates/months (if applicable – for programmes	Mode

		time) Please select	that have multiple intakes or start dates that differ from the usual academic year)	Face-to-face, campus-based		Distance learning		
BSc	3	Full-time	n/a	Please select Y/N	Yes	Please select Y/N	No	

Language(s) of study

English

Language(s) of assessment

English

2. Programme accreditation by Professional, Statutory or Regulatory Bodies (PSRB)

2.a. Is the programme recognised or accredited by a PSRB

Please Select Y/N:	Yes	if No move to section 3

2.b. Please provide details of any approval / accreditation event needed, including: timescales, the nature of the event, central support / information r

All existing programmes are accredited by the Royal Society of Chemistry (PSRB) and future design and development need to be considered within this acc framework (http://www.rsc.org/Education/courses-and-careers/accredited-courses/). Full accreditation for the new courses was obtained from the RSC in

2.c. Does/ will approval or recognition require exceptions to University rules/practices?Please	No	if Yes, provide details

N/A

2.d. Any additional information (e.g. student attainment required to achieve accreditation) that are required by the PSRB should be recorded here

N/A

3. Additional Professional or Vocational Standards

Are there any additional requirements of accrediting bodies or PSRB or pre-requisite professional experience needed to study this programme?		
Please Select Y/N:	No	if Yes, provide details

N/A

4. Programme Leader

Nigel Lowe

4.b. How are wider stakeholders such as professional bodies and employers involved in the design of the programme and in ongoing reflection on its ef

The programme is monitored through initial accreditation and re-accreditation on a 5-year cycle through the Royal Society of Chemistry. Employer overvie through the Department's External Advisory Group comprising academic and sector employer representatives. Advice from External Examiners has been s preparation for approval.

5. Purpose and learning outcomes of the programme

5.a. Statement of purpose for applicants to the programme

Our degree has been carefully constructed to train the next generation of chemists, and will take students on a journey of exploration deep into the subjec forefront of cutting-edge chemical research. In particular, we focus on showing applications of the fundamental chemistry, and providing practical training art facility. We undertake to develop the full range of skills, from communication and team-working to scientific literacy and problem solving, in a clear che In this way, students will be ideally prepared for whatever comes next – be it a MSc/PhD position, research work in industry, a career in teaching, or other graduate-level work. This is reflected in our strong final destination statistics. The course is delivered with a strong focus on small group teaching and allow between bachelors and masters programmes with the opportunity to specialise into three separate 'Chemistry with' courses in addition to Chemistry itself courses are defined by a distinct pathway through our specialised (rather than core) modules; all these specialised modules are optional modules on the ge courses and the flexibility students have to switch between our named and generic courses (up to the end of Year 2, and provisional on achieving the 55% required to access Year 3 MChem) means that any student can choose any specialised module provided they concomitantly change their course. The BSc '(Biological and Medicinal Chemistry' describes a 3-year course with defined, cognate specialised topics in Year 2 (20 credits) and Year 3 (20 credits) and a re (40 credits) related to biological or medicinal chemistry. The 3-year BSc, with its more even balance of chemistry-specific content and general training in tr is the natural choice to launch careers in a wide range of graduate professions including chemistry; the 4-year MChem qualification takes students to the r of modern, interdisciplinary chemistry, and it is thought to be the natural choice for those anticipating an academic or commercial career in the subject.

5.b.Programme Learning OutcomesPlease provide six to eight statements of what a graduate of the programme can be expected to do.

PLO	On successful completion of the programme, graduates will be able to:

1	demonstrate learning and problem solving skills through the acquisition and application of a broad range of fundamental chemical principles and
2	apply fundamental chemical principles and knowledge to the in-depth study of chemical science specialisms relating to biological and medicinal ch solution of problems therein.
3	design and safely conduct chemical experiments through an effective risk assessment. Accurately document and record experiments to enable the synthesis of chemical compounds and analysis of physical measurements, of both a quantitative and qualitative nature.
4	interpret experimental data by using mathematical skills, chemical knowledge, information technology and scientific conventions.
5	effectively articulate scientific principles, experimental results and research findings in a way that is accessible to a variety of audiences through w other formats.
6	independently, or as part of a group, plan, design and conduct an open-ended investigative research project in an area related to biological or me to consolidate and extend knowledge and understanding of chemistry.
7	demonstrate employability skills such as teamworking, commercial awareness, self-management and creativity and be equipped to work in a prof in their future careers in a range of areas including chemistry, biological and medicinal chemistry.

5.c. Programme Learning Outcome for year in industry (where applicable)For programmes which lead to the title 'with a Year in Industry' – typically inv

N/A

5.d. Programme Learning Outcome for year abroad programmes (where applicable)For programmes which lead to the title 'with a Year Abroad' – typic

N/A

5.e. Explanation of the choice of Programme Learning OutcomesPlease explain your rationale for choosing these PLOs in a statement that can be used f

i) Why the PLOs are considered ambitious or stretching?

The PLOs describe a journey from consolidating basic chemical principles at the start of the course through to contributing to cutting-edge research in core interdisciplinary chemistry at the end. The range of formative learning experiences in lecture, laboratory, workshop and tutorial, allied to independent wor and group settings, provide a structured training to meet the aspiration of the PLOs. The summative assessment points, including formal examinations, ass presentations and extended research project, allow the achievement of the knowledge, skills and attributes of the PLOs to be demonstrated.

ii) The ways in which these outcomes are distinctive or particularly advantageous to the student:

The outcomes are advantageous as they ensure that the research-led teaching of chemical science is integrated with the development of laboratory, probl employability skills. This will ensure that the York Chemist has all the technical and employability skills needed in his/her future career regardless of wheth inside or outside the chemical sciences. The PLOs remind students that the course provides an education through chemistry as well as an education in chei project work (PLO6) gives the BSc some element of preparation for research careers in chemistry, though not as extensively as the 4-year MChem, and der skills with relevance to a range of future emplyment.

iii) How the programme learning outcomes develop students' digital literacy and use technology-enhanced learning to achieve the discipline and pedagogic goals which s

Chemistry students develop effective communication and related skills through regular application of digital literacy skills. In Year 1, students will give an o and prepare a team poster on a practical project involving presentation software and specialist molecular drawing packages including the use of molecular the Protein Data Bank (PDB). They also carry out a public communication of science exercise, producing a popular science article or YouTube video aimed a application of polymer science. Some student videos have had thousands of views globally and been highlighted by international chemistry magazines. In Y communication skills are enhanced by the smartphone video recording and sharing of group presentations and feedback thereon. Students will use special databases used to visualise proteins and to calculate properties of small molecules. Year 3 focuses on scientific literacy, and develops the ability to write sc with effective use of search tools and databases to access reserach literature culminating in the BSc project report. Computational approaches continue to applications of quantum chemistry. Data manipulation and analysis in laboratory work frequently involve the use of scientific software, with appropriate tr Department makes near comprehensive use of lecture recording, and all modules are supported by material on the VLE including screencasts, external link with pockets of use of 'flipping' and 'clicker' technology. The VLE is exploited variously for online workflow management including submission of summativ

iv) How the PLOs support and enhance the students' employability (for example, opportunities for students to apply their learning in a real world setting)?
http://www.york.ac.uk/about/departments/support-and-admin/careers/staff/

At the start of Year 1, students take part in 'The Happening' – a fun, industrially-led event, in which they get to know other students as they work in teams world chemical problem. In Year 1, they also carry out Integrated Chemistry Team Practical Projects in which the contents of a 'typical' night out are analys alcohol and a 'morning-after' coffee, to determine levels of fat, protein, alcohol, sugar and caffeine. This develops research, time-management and team-v Year 2, these ideas of team-working are developed much further in the 'Group Exercises', in which they work in smaller teams in a mock industrial compan world chemistry problem. The suite of exercises covers various aspects of the chemical and related industries, the development of which was supported by themselves. Having to organise meetings, keep minutes and consider financial implications also helps develop business skills. The Year 3 BSc research proje planning of open-ended research – only by collaborating effectively as a group, or an individual, within a research group can students achieve an optimal u the complex topic they are studying – exactly as in modern interdisciplinary research. Chemistry at York is an Athena Swan Gold department, and we foste atmosphere, particularly through our team-working exercises, in which students will be encouraged to recognise the contributions of all the diverse memb

v) Consultation with Careers

The Department has a dedicated Careers Liaison Officer who works closely with the Industrial Placement Coordinator to circulate information and opportu and to deliver training through CV Writing and Interview Skill workshops. These are delivered in collaboration with staff from Careers. The new course will current links to, and involvement of, Careers from the current course. For this reason, we have not consulted directly with the Careers service during the p new course.

vi) How will students who need additional support for academic and transferable skills be identified and supported by the Department?

The Department has two principal mechanisms for identifying students who require additional support. Firstly, any student whose assessment results are e failing are identified by the appropriate examinations officers and then written to by the Chair of the Board of Studies and counselled by their supervisors. will meet with the Student Welfare Officer and their supervisors and a personal learning plan developed. Secondly, the need for individual support is ident college teaching system where progress is monitored weekly. Student supervisors review progress at the end of term meetings and any actions identified. are assigned a mentor who is studying in a higher year in the same chemistry college as them. These mentors can provide advice on a range of social issues preparing for arrival at university, settling into York or finding good student houses in the second year, as well as on academic issues such as option modul Furthermore, there are centrally-timetabled revision classes, run by the mentors, to provide academic peer-to-peer support to the benefit of mentees and

vii) How is teaching informed and led by research in the department/ centre/ University?

The Department of Chemistry has a research-led teaching philosophy. Although most of the core material in Years 1 and 2 is common in UK Chemistry Dep 3 material aligns with the research specialisms in the Departments. Furthermore, the option module structure has been specifically designed to reflect the expertise in the Department with courses on environmental, sustainable, analytical and biological/medicinal chemistry as well as options on mechanistic cl

5.f. Stage-level progressionPlease complete the table below, to summarise students' progressive development towards the achievement of PLOs, in ter

Stage 0 (if your programme has a Foundation year, use the toggles to the left to show the hidden rows)						
On progression from the first year (Stage 0), students will be able to:			*Global statement*			
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
Individual statements						
Stage 1						

On progression from the first year (Stage 1), students will be able to:	*demonstrate an understanding of core chemical principles that will underpin studies stages (PLO1). By working through guided activities in our laboratories, students wil acquired key laboratory skills for the synthesis and analysis of chemical compounds experience of acquiring, recording, processing and analysing physical data (PLO4). S have developed the key quantitative, mathematical and IT skills needed for further s through 'Skills for Chemists' and self-directed, independent learning including, for ex Excel in linear regression analysis. Students will begin to acquire invesitgative (PLO6, communication (PLO5) skills through the ICP lab-based activity, and communication media developed in the 'Macromolecules' self-study package. Personal skills (PLO7) through small-group teaching environments, through group work in laboratories an Professional Chemist' presentations and through 'The Happening' activity.*

PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
Individual statements						

Stage 2

On progression from the second year (Stage 2), students will be able to:	*demonstrate an understanding of chemical principles at an intermediate level and h applied to solve unseen, complex problems that begin to challenge basic theories (PL teaching of 20 credits of option modules, they will gain a more detailed knowledge c chemical science specialisms with the added complexity of interdisciplinarity (PLO2). Synthesis laboratory course will develop techniques necessary to handle sensitive an hazardous materials in a controlled manner (PLO3) whilst physical chemistry practic deeper consideration of data acquisition and analysis involving the use of software i (including the use of Excel in non-linear regression analysis) and presentation (PLO4, simulation of experiments to inform experimental design in Hammett Lab (PLO6). Av practice of employability skills with a view to developing future career paths (PLO7) developed through tutorial and workshop teaching and by collaboration in laborato Intermediate levels of written and oral communication (PLO5) and teamworking skil developed through the Year 2 Group Exercises and the focus on employability (PLO7, through Interview Skills and CV Writing workshops. Additionally, at graduation, BSc demonstrate an understanding of complex chemical principles, recent developments in the field from a research-led perspective (PLO1). Through the study of a further 20 option modules, students will advance their knowledge of science specialisms (PLO2, forefront through research literature and problem solving. Students will learn advan research techniques (PLO3) through research projects involving the design and imple experiments which require direct engagement with the primary chemistry literature potentially advanced analysis of data (PLO4) from a wide range of instrumental ana Presentation (written, oral) skills (PLO5) will have been enhanced through the report and engagement with experimental design and the interpretation of research litera developed (PLO6). Collaborative skills and interpersonal communication skills contin through tutorial/workshop teaching and especially BSc project work that can be inde based investigative chemistry research projects or science communication projects i schools or public outreach events (PLO7).*

PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
Individual statements						

Stage 3

(For Integrated Masters) On progression from the third year (Stage 3), students will be able to:			*Global statement*			
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
Individual statements						

5.g. Other features of the programme

i) Distance Learning

Please Select Y/N:	No	if Yes, you are required to submit to Teaching Committee: Checklist for Distance Learning Programmes

ii) Involvement of partner organisations

Please Select Y/N:	No	if Yes, outline the nature of their involvement (such as contributions to teaching, placement provision). Where appropriate, see al University guidance on collaborative provision

N/A

iii) Internationalisation/ globalisation

The Department regularly recruits a small but significant number of undergraduates from around the world. The make-up of our academic staff and especi international postgraduate cohort create an appropriately supportive atmosphere. The postgraduate-led 'Chemical Interactions' society runs a number of year to which all staff and student members are invited and these are often run along internationally-themed lines. We regularly host Erasmus students wi modules and our Yr Abroad scheme (MChem only) places ca. 15 Year 4 students annually in partner universities around the world.

iv) Inclusivity

This refers to the protected characteristics and duties on the University outlined in the Equality Act 2010

With over 10 years of accreditation at Gold level under the Athena SWAN scheme, the Department is justifiably proud of its record in this area. In addition Welfare Officer, the Department has identified a Disability Officer, a Women's Officer, a Study Skills Officer and a Harassment Officer. Additionally, a numb students have contributed articles and participated in events focusing on LGBT contrbutions to the discipline. We maintain a quiet room/prayer room for t and students. An Equality & Diversity session on inclusivity/unconscious bias is part of the Year 1 'Becoming a Professional Chemist' activity emphasising its teamworking in the modern workplace. The Department participates actively in the Widening Participation initiative through targeted admission and outre involving schools not traditionally supplying York with Chemistry undergraduates.

v) Summer term weeks 8-10

This period is home to our ICP laboratory-based group research projects at the end of Year 1 and to the Group Exercise and Career-focused activities of Yea there are no timetabled activities in this slot at the end of Year 3 prior to graduation.

6. Reference points and programme regulations

6.a. Relevant Quality Assurance Agency benchmark statement(s) and other relevant external reference pointsPlease state relevant reference points cor

https://www.york.ac.uk/media/staffhome/learningandteaching/documents/policies/Framework%20for%20Programme%20Design%20-%20UG.pdf
http://www.qaa.ac.uk/assuring-standards-and-quality/the-quality-code/subject-benchmark-statements
http://www.qaa.ac.uk/publications/information-and-guidance/publication?PubID=2843#.VthM1fmLS70

The PLOs were designed to capture the spirit of York Pedagogy whilst retaining the scope of the national subject benchmark statements for chemistry and, purposes, the requirements for breadth and depth of coverage specified by the Royal Society of Chemistry.

6.b. University award regulations

The University's award and assessment regulations apply to all programmes: any exceptions that relate to this programme are approved by University Teaching Committ

6.c. Are students on the programme permitted to take elective modules?

(See: https://www.york.ac.uk/media/staffhome/learningandteaching/documents/policies/Framework%20for%20Programme%20Design%20-%20UG.pdf)

Please Select Y/N:	Yes

7. Programme Structure

7.a. Module Structure and Summative Assessment Map

Stage 0 (if you have modules for Stage 0, use the toggles to the left to show the hidden rows)

Stage 1

Credits	Module		Autumn Term										Spring Term										Summe				
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5
30	CHE00015C	Core 1: Fundamen	S								A		EA														
30	CHE00016C	Core 2: Chemical P											S					A									
30	CHE00017C	Core 3: Molecules											S											A			
20	CHE00018C	Year 1 Practical Ch	S									A										A		A	A	A	
10	CHE00019C	Skills for Chemists	S									A	A														

Stage 2

Credits	Module		Autumn Term										Spring Term										E				
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5
20	CHE00016I	Core 4a:	S										EA														
20	CHE00017I	Core 4b: Theory,	S						A				EA														
30	CHE00018I	Core 5: Reactivity											S										A				
30	CHE00019I	Core 6:											S										A				
20	CHE00021I	GP: Genes to											S									A					

Stage 3

Credits	Module		Autumn Term										Spring Term										Summe				
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5
20	CHE00026H	Core 7: Advanced	S																		A						
20	CHE00027H	Core 8: Synthesis	S														A										
20	CHE00028H	Core 9:	S																								
40	CHE00033H	BSc Research	S																				EA				
20	CHE00030H	CD: Chemistry	S						A				EA														

Stage 4

Credits	Module		Autumn Term										Spring Term										Summe				
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5

7.b. Optional module listsIf the programme requires students to select option modules from specific lists these lists should be provided below. If you need

Option List A	Option List B	Option List C	Option List D	Option List E	Option List F	Option List G

7.c. Explanation of the programme and assessment designThe statements should be in a form that can be used for students (such as in a student handb

i) Contact with staff

Students meet our internationally recognised researchers through lectures, small group tutorials/workshops and laboratory sessions. Lectures deliver infor but much more with demonstrations, interactive problem solving (e.g. with access to model kits) and illustrative examples from academic and "real-world staff use 'flipped' material and 'clickers' to enhance interactivity. Typical support materials used include quizzes, extra links and screen-casts on the VLE, w Twitter and YouTube. Small group learning through our teaching college system provides supportive teaching through a mixture of tutorials (groups of 5 st workshops (groups of 20-25). These sessions tackle conceptual difficulties and challenge students to construct arguments and explain ideas to each other (pre-work helps students assess their understanding and writing skills, and develop problem solving skills (PLO1,5). Laboratory work is supported by acaden staff as well as postgraduates who teach, (PGWTs). Guidance is focused on developing safe working practices, good laboratory protocols, effective manipu equipment and instrumentation, and a deeper understanding of the skills needed to analyse data and to design investigations in preparation for research (

ii) Students' independent study and formative work

The programme has been designed with our small-group college teaching system at its core. It is our belief (and comprehensively evidenced through stude that these activities are central to student learning and skill development. The majority of students' independent work and formative assessment is associa group teaching (PLO1,2,5,7). Laboratory work in Year 1 focuses on developing laboratory skills. Weekly assessment is formative with occasional summative being used to evaluate levels of competence. The focus of assessment will shift from rewarding attendance and report submission in favour of directly assi acquisition and demonstration of key laboratory skills (PLO3-7). Taught material in Year 4 is delivered as blended learning for all students whether in York, Industry or Year Abroad programmes. This approach prepares students for career development, self-study and PDP consistent with the postgraduate level learning is often divorced from formal lecture programmes (PLO7).

iii) Summative Assessment

Summative assessment through exams remains key to testing PLOs 1 & 2 and builds directly on the formative assessment of work submitted in connection tutorials and workshops. Some assessment in Year 1 will be conducted through the use of MCQ, which allow the convenient assessment of a wide range of materiial (PLO1). More traditional written answers will be retained to test writing skills and provide preparation for conventional examinations in later yea Department makes use of various forms of continuous assessment that reduce the burden of formal exams and allow complementary skills to be develope As in the current course, higher years (Yrs 2-3) will be assessed summatively through traditional core exams (and assessed workshops) (PLO1), option exam workshops) (PLO2), practical work (through in-lab (PLO3) and post-lab assessment (PLO4,5), project work/reports (PLO3,4,5,6) and group exercises/presentations/posters/assorted multimedia output (PLO4,5,7).

8. Contribution of staff

8.a. Please outline (where applicable) the contribution of Postgraduate who Teach (PGWTs) to the programme. The programme must comply with the University Policy on

PGWTs are principally involved in support and delivery of laboratory teaching. They play a direct role in teaching aspects of experimental and instrumental students and advising them on data collection and interpretation particularly in the area of spectroscopy. This is achieved through a combination of partici teaching sessions, formative assessment and summative assessment based on closely defined, moderated mark schemes. PGWTs are encouraged to ment making links between their own research and the activities students meet in a more didactic setting. They also play a key role in helping to maintain high H

8.b. If casual teaching staff and/ or staff external to the University will be involved in delivery of the programme, please outline how they will contribute ar

N/A

9. Study Abroad (including Year Abroad as an additional year and replacement year)

Students on all programmes may apply to spend Stage 2 on the University-wide North America/ Asia/ Australia student exchange programme. Acceptance

https://www.york.ac.uk/staff/teaching/procedure/programmes/design/

Please Select Y/N:	No	if No move to section 10

9.a.Will the department need to agree new/ additional study abroad partnerships in order to offer this programme?

Please Select Y/N:	No	

9.b.Please briefly detail the nature of the study abroad (tick and/ or provide additional detail as appropriate):

i) Is it an additional/ replacement year?	replacement year	
Additional details:		

N/A

ii) Is it compulsory/ optional element of the	optional element	
Additional details:		

N/A

iii) If it is an additional year, is it direct entry/		
Additional details:		

N/A

iv) How will students taking Study Abroad be assessed?

N/A

v) Can it be reassessed? (please select Y/N)	Yes	Explain how:
Explain how:		

N/A

vi) If a student fails the Study Abroad which programme will they transfer onto or will they leave the University?

N/A

vii) How will the programme team manage the risks associated with offering Placement Learning and Study Abroad?

N/A

10. Work-based learning (including years in industry)

It is strongly recommended that departments that do not already have an established work-based learning programme should contact Careers for help an

10.a. Does the programme include the opportunity to undertake work-based learning/ placements, including years in industry? All such programmes m

https://www.york.ac.uk/staff/teaching/procedure/programmes/design/

This should include the signing of learning agreements between the student, department and work-place

Please Select Y/N:	No	if No move to section 11

i) Is it a compulsory or optional element of the programme?

Please Select:	optional	

ii) Briefly detail the nature of the work-based learning:

N/A

iii) Who will be responsible for sourcing and arrangin	Student	

Additional details:

N/A

iv) Is the work-based learning an additional year in industry?

Please Select Y/N:	No	if No move to section 10.b.

v) Is it direct entry/ transfer in? (please select)		

Additional details:
N/A
vi) What will be the criteria for the selection of locations for work-based learning?
N/A
vii) How will the department ensure a sufficient number of work-based learning opportunities?
N/A
viii) How will the department make work-based learning providers aware of their responsibilities?
N/A
ix) How will the department make students aware of their rights and responsibilities?
N/A
x) How will students taking a year in industry be assessed?
N/A
xi) Can it be reassessed?

Please Select Y/N:		

if yes, please explain how:

N/A

xii) How will the programme team manage the risks associated with offering a year in industry?

N/A

10.b. For programmes involving other forms of work-based learning other to years in industryIt is strongly recommended that departments that do not

All such programmes must comply with the policy on work-based learning and placements

https://www.york.ac.uk/staff/teaching/procedure/programmes/design/

This should include the signing of learning agreements between the student, department and work-place

i) What will be the criteria for the selection of locations for work-based learning?

N/A

ii) How will the department ensure a sufficient number of work-based learning opportunities?

N/A

iii) How will the department make work-based learning providers aware of their responsibilities?

N/A

iv) How will the department make students aware of their rights and responsibilities?

N/A

v) How will students undertaking work-based learning be assessed?

N/A

vi) Can it be reassessed?

Please Select Y/N:	Yes	

if yes, please explain how:

N/A

10.c. Support for students on work-based learning

i) How will students be briefed prior to, and de-briefed after, work-based learning?

N/A

ii) Who in the department will be responsible for overseeing students whilst they are undertaking work-based learning?

N/A

iii) By what means (e.g. work-based mentors, VLE, ongoing communication with the department) will students be supported when undertaking work-based learning?

N/A

iv) How will any work-based mentors be trained and utilised?

N/A

v) If mentors/ employers are to be involved in assessment how will they trained, supported and monitored?

N/A

vi) How will work-based learning be monitored and reviewed?

N/A

Careers & Placements - 'With Placement Year' programmes

Students on all undergraduate and integrated masters programmes may apply to spend their third year on a work-based placement facilitated by Careers &
Such students would return to their studies at Stage 3 in the following year, thus lengthening their programme by a year. Successful completion of the plac
associated assessment allows this to be recognised in programme title, which is amended to include 'with Placement Year' (e.g. BA in XYZ with Placement Y
Placement Year also adds a Programme Learning Outcome, concerning employability. (See Careers & Placements for details).

In exceptional circumstances, UTC may approve an exemption from the 'Placement Year' initiative. This is usually granted only for compelling reasons conc
accreditation; if the Department already has a Year in Industry with criteria sufficiently generic so as to allow the same range of placements; or if the progr
than three years in length.

Programme excluded from Placement Year?	No	If yes, what are the reasons for this exemption:

11. Additional information

11.a. Recognition of prior learning / credit transferWill this programme involve any exemptions from the University Policy and Procedures on Credit Tra

Please Select Y/N:	No	

11.b. Continuing Professional Development		
Please Select Y/N:	No	

if yes, please explain how:

N/A

11.c. Ethical considerationsDoes the programme give rise to any ethical issues, which might warrant wider consideration within the University? (E.g. wi		
Please Select Y/N:	No	if yes, please provide brief details to be referred onto the appropriate body within the University:

if yes, please provide brief details to be referred onto the appropriate body within the University:

N/A

11.d. Student involvement in programme developmentHow were current and/ or former students involved in the development of this proposal/ progra

Student representation at DTC has allowed current students to share their thoughts about the design of the new course. This consultation process is ongoi recent appointment of new student reps and the re-drafting of PDD documentation. Initial responses (as minuted at DTC 19/10/16) include recognition of rationlising content into fewer modules with the potential to reduce assessment-related workload for staff and students. We have previously monitored re of the challenge posed by multiple assessment points at our Staff Student Forum in coming to a decision about moving to fewer, larger modules. (This idea through a recent External Review and by Periodic Review; York Pedagogy has provided a route to rationalisation) We have monitored module and course (from students to identify and retain popular aspects of our courses.

11.e. External Examiners		
i) Will any additional external examiners need to be appointed for the programme?		
Please Select Y/N:	No	
ii) Does the programme team envisage any difficulties in obtaining appropriate external examiners?		
Please Select Y/N:	No	
iii) Will any external examiners be drawn from outside academia? (please select Y/N)	No	
Additional details:		

N/A

11.f. Transfers out of or into the programme		
ii) Transfers into the programme will be possible?	Yes	
Additional details:		

Students registered for the MChem programmes are entitled to transfer into BSc Chemistry up to the start of Year 3.

ii) Transfers out of the programme will be possible?	Yes	

Additional details:
Students registered on the BSc programme are entitled to transfer into other named BSc programmes at any stage provided they have studied the correct appropriate points. They can transfer to the MChem course (and named MChem courses with the appropriate option) upto the start of Year 3 provided the 55% threshold at the end of Yr2.

12. Exceptions to University Award Regulations approved by University Teaching Committee	
ExceptionPlease detail any exceptions to University Award Regulations approved by UTC	**Date approved**
n/a	

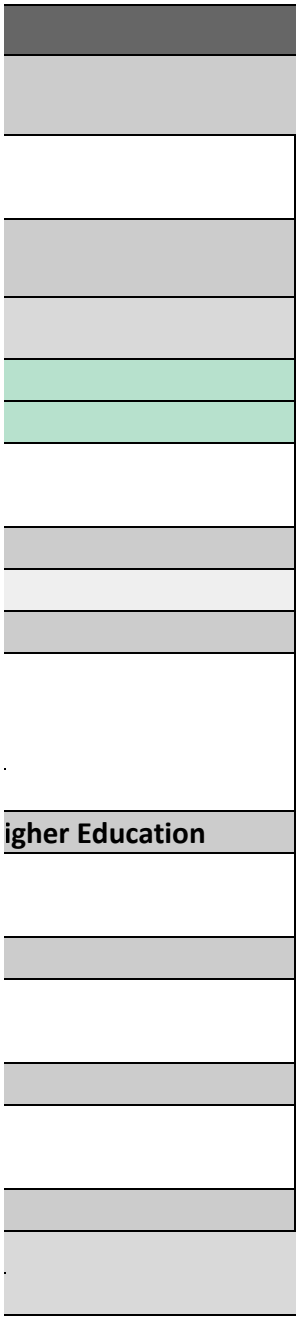
Quality and Standards
The University has a framework in place to ensure that the standards of its programmes are maintained, and the quality of the learning experience is enhanced.
More information can be obtained from the Academic Support Office:
http://www.york.ac.uk/about/departments/support-and-admin/academic-support/staff/#quality

Date on which this programme information was updated:

Departmental web page:

https://www.york.ac.uk/chemistry/

Please note:The information above provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasc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Programme Map: Module Contribution to Programme Learning Outcomes

This table maps the contribution to programme learning outcomes made by each module, in terms of the advance in understanding/ expertise

Stage	Module		Programme Learning Outcomes					
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**
			demonstrate	**apply**	**design and safely**	**interpret**	**effectively**	**independently,**
Stage 1	Core 1: Fundamentals of Chemistry	Progress towards	Developing an			Data analysis	Development of	
		By working on	Engaging with			Data analysis in	Preparation of	
Stage 1	Core 2: Chemical Properties & Analysis	Progress towards	Developing an			Data analysis	Development of	
		By working on	Engaging with			Data analysis in	Preparation of	
Stage 1	Core 3: Molecules & Reactions	Progress towards	Developing an			Data analysis	Development of	Literature
		By working on	Engaging with			Spectral data	Preparation of	Macromolecules
Stage 1	Practical Chemistry	Progress towards			Development of	Data analysis	Development of	Develop
		By working on			Laboratory	Data analysis	Preparing outline	Use of databases
Stage 1	Skills for Chemists	Progress towards	Key biological,			Learning key	Communication	Develop
		By working on	Building a			Mathematics for	The Happening -	Becoming a
Stage 2	Core 4a: Molecules in Action	Progress towards PLO	Developing an understanding of organic, biological and physical chemistry at an intermediate level.		Develop intermediate skills required for synthetic inorganic and organic chemistry including handling air and water-sensitive materials and pyrophorics. Working safely in the laboratory	Data analysis	Development of written and oral presentation skills.	

		By working on (and if applicable, assessed through)	Engaging with lectures and learning support activities on Safety, Biomolecules in Action, Retrosynthetic analysis, Organic synthesis with enolate equivalents, Solution and mixtures. Applications to unseen problems in tutorial and workshops. Formative assessment is through small-group tutorial/workshop assignments in each topic and summative assessment through an online assessment (Safety) and a closed-book examination (January).		Experiments within the Advanced synthesis practical. Safety lecture course and assessment highlights good working practice. Core and advanced laboratory skills are formatively assessed during the Skills exercise then summatively assessed on a weekly basis principally through in-lab assessments during the first half of term.	Analysis of data within Advanced synthesis practical, including use of specialist software (NMR processing). Introduction to multinuclear NMR and vib/rotn spectroscopy. Formative assessment through optional post-lab tasks. Summative assessment through selected assessed post-lab tasks. Formative assessment through related tutorial and workshop problem-solving activities.	Preparation of written tutorial and workshop exercises. Engagement in tutorials and workshops. Formative assessment of articulation of intermediate scientific concepts in writing and oral presentation. Summative assessment through related examination. Experiments within the Advanced synthesis practical; summative assessment of the writing of journal-style synthetic protocols and interpretation and presentation of spectroscopic data building on	

Stage 2	Core 4b: Theory, Analysis & Mechanisms	Progress towards PLO	Developing an understanding of inorganic, physical and analytical chemistry at an intermediate level.		Develop intermediate skills required for synthetic inorganic and organic chemistry including handling air and water-sensitive materials and pyrophorics. Working safely in the laboratory.	Development of key mathematical skills and data analysis	Development of written and oral presentation skills.	

		By working on (and if applicable, assessed through)	Engaging with lectures and learning support activities on Mass Spectrometry, Quantum Mechanics, Symmetry and Group Theory, Metal-ligand Bonding & Inorganic Mechanisms, Matrices & Determinants. Applications to unseen problems in tutorial and workshops.		Experiments within the Advanced synthesis practical. Core and advanced laboratory skills are formatively assessed during the Skills exercise then summatively assessed on a weekly basis principally through in-lab assessments during the second half of term.	Analysis of data within Advanced synthesis practical esp. spectral data inc. NMR. Formative assessment through Skills training and optional post-lab tasks. Summative assessment through selected assessed post-lab tasks. Matrices and Determinants course; formative assessment through workshops and summative assessment through final assessed workshop.	Preparation of written tutorial and workshop exercises. Engagement in tutorials and workshops. Formative assessment of articulation of intermediate scientific concepts in writing and oral presentation. Experiments within the Advanced synthesis practical; summative assessment of written descriptions of key laboratory techniques and NMR data presentation; optional formative tasks in writing of journal-style synthetic protocols and	

Stage 2	Core 5: Reactivity	Progress towards PLO	Developing an understanding at intermediate level of key methods for structural analysis and their physical basis, and the reactivity of organic molecules dependent on substitution patterns and complexation to metals.		Record experimental data. Use simulation software to aid experimental design.	Data analysis	Development of written and oral presentation skills.	

		By working on (and if applicable, assessed through)	Engaging with lectures and learning support activities on Organometallic chemistry, Physical organic chemistry, Heteroaromatic Chemistry, Synthesis of biological molecules, Physical methods for structure determination and Electrochemistry. Applications to unseen problems in tutorial and workshops. Formative assessment is through small-group tutorial/worksho p assignments in each topic and summative assessment through an open-book assessment (Physical		Physical organic chemistry laboratory and related Hammett Lab software simulation. Summative assessment by written report of the use of Hammett Lab simulation to model substituent effects on the rate of reaction.	Physical organic chemistry laboratory. Analysis of reaction mechanism by exploration of reaction kinetics including introduction to non-linear regression analysis. Summative assessment through lab reports. Formative assessment through related tutorial problem-solving activities.	Preparation of written tutorial and workshop exercises. Engagement in tutorials and workshops. Formative assessment of articulation of intermediate scientific concepts in writing and oral presentation. Physical organic chemistry laboratory; summatively assessed long-format laboratory reports building on report-writing of Physical practicals (Core 6). Presentation skills formatively assessed in first Group Exercise team presentation (video recorded) and summatively	

Stage 2	Core 6: Spectroscopy & Chemistry	Progress towards PLO	Developing an understanding at intermediate level of key spectroscopic techniques and their orbital interpretation with applications in organic chemistry and catalysis.		Design and perform experiments	Data analysis	Development of written and oral presentation skills.	

		By working on (and if applicable, assessed through)	Engaging with lectures and learning support activities on Excited states and photochemistry, Applications of NMR spectroscopy in organic chemistry, Photoelectron spectroscopy and molecular orbital theory, Vibrational spectroscopy, Catalysis, Fundamentals of Atmospheric Chemistry, and Fundamentals of Magnetic Resonance. Applications to unseen problems in tutorial and workshops. Formative assessment is through small-group tutorial/worksho		Physical chemistry practical	Physical chemistry practical including use of specialist software (Gaussian); self-guided study package with summative assessment via calculation of optimised molecular structures and their characteristic vibrational frequencies	Preparation of written tutorial and workshop exercises. Engagement in tutorials and workshops. Formative assessment of articulation of intermediate scientific concepts in writing and oral presentation. Physical chemistry practical; summatively assessed short- and long-format laboratory reports, the latter building on formative report-writing skills session.	

Stage 2	Genes to Proteins	Progress towards PLO		Applying learning skills and core chemical principles to gaining a detailed knowledge of biological and medicinal chemistry and applications in problem solving			Development of written and problem-solving skills	

		By working on (and if applicable, assessed through)		Engaging with lectures and learning support activities on Transcription & Control of Gene Expression, Protein Synthesis & DNA Replication, Genetic & Protein Engineering, Protein Structure, Determining Protein Structure and Proteins in Action. Applications to unseen problems and case studies in workshops. Formative activities include workshop assignments and summative assessment is through two assessed workshops (Genetic/Protein engineering &			Learning support workshops; formative assessment through supported workshop activities with summative assessment of written work covering specialised chemical topics at an intermediate level through an assessed workshops and examination.	

Stage 3	Core 7: Advanced Concepts	Progress towards PLO	Understanding high-level chemical principles across physical, theoretical and organic chemistry.				Development of written and oral presentation skills	

		By working on (and if applicable, assessed through)	Engaging with lectures and learning support activities on Bioinorganic Chemistry, Electronic States of Atoms & Molecules, Statistical Thermodynamics, Applications of Quantum Chemistry, Pericyclic Reactions and Supramolecular & Nanoscale Chemistry. Applications to unseen problems in tutorial and workshops. Formative assessment is through small-group tutorial/workshop and computer-based assignments in each topic and summative assessment				Preparation of written tutorial and workshop exercises. Engagement in tutorials and workshops. Formative assessment of articulation of complex scientific concepts in writing and oral presentation.	

Stage 3	Core 8: Synthesis & Structures	Progress towards PLO	Understanding high-level chemical principles across the organic-inorganic chemistry interface.				Development of written and oral presentation skills	

		By working on (and if applicable, assessed through)	Engaging with lectures and learning support activities on Main Group Chemistry: Bonding & Applications, Synthetic Frontiers of Inorganic Chemistry & Ligand Design, Metal-Mediated Synthesis, Asymmetric Synthesis, Radicals in Synthesis and Advanced Separations & Mass Spectrometry. Applications to unseen problems in tutorial and workshops. Formative assessment is through small-group tutorial/worksho p assignments in each topic and summative				Preparation of written tutorial and workshop exercises. Engagement in tutorials and workshops. Formative assessment of articulation of complex scientific concepts in writing and oral presentation.	
Stage 3	Core 9: Compounds & Materials	Progress towards PLO	Understanding high-level chemical principles across physical and materials chemistry.				Development of written and oral presentation skills	

		By working on (and if applicable, assessed through)	Engaging with lectures and learning support activities on Processes at Solid Surfaces, Principles of Diffraction, Electronic Properties of Materials, f-block chemistry, Materials & Nanoparticles and Electronic Spectra & Photochemistry of Transition Metals. Applications to unseen problems in tutorial and workshops. Formative assessment is through small-group tutorial/worksho p assignments in each topic and summative assessment through a closed-book				Preparation of written tutorial and workshop exercises. Engagement in tutorials and workshops. Formative assessment of articulation of complex scientific concepts in writing and oral presentation.	

Stage 3	BSc Research Project	Progress towards PLO		Fundamental investigation of specific chemical principles in the area of biological or medicinal chemistry; researching project-related literature topic	Design laboratory experiments and carrying out risk assessments. Documenting work through a lab book.	Experimental data interpretation and analysis	Written presentation skills	Plan, design and conduct independent (or group) open-ended investigative research project in the area of biological or medicinal chemistry

		By working on (and if applicable, assessed through)		Research project including literature review and comprehension. Formative research/laboratory experiences are guided by the supervisor and other research group members. Formative assessment of a project report/lit review draft. Summative assessment by final project report (35%), supervisor's project execution mark (35%) and literature review (17.5%). Summative literature comprehension exam (6.25%).	Research Project. Collaboration with project supervisor and research group encourages development of increasingly independent approaches to safe working and the design and interpretation of experiments. Summatively assessed though the written report and the supervisor's project execution mark (35% of module).	Research Project. Collaboration with project supervisor and research group encourages development of skills in data analysis. Summatively assessed though the written report (35% of module).	Research project report (35% summative assessment) with prior formative draft stage. Summative assessment of essay writing through Sci Lit exam (6.25%) with formative Scientific Writing session and workshop.	Research Project. Students experience an independent project experience within a research group or as a small group working on related topics. Formative experience is provided through introductory courses (literature, safety, etc.) and through support within research groups and supervision. Summative assessment is achieved through assessment of the project by report and through the supervisor's assessment of student research skills.

Stage 3	Chemistry & Disease	Progress towards PLO		Applying learning skills and core chemical principles to gaining a detailed knowledge of biological and medicinal chemistry and applications in problem solving		Understanding the role of computers in chemistry	Development of written and problem-solving skills	

		By working on (and if applicable, assessed through)		Engaging with lectures and learning support activities on Introduction to Chemotherapy, Drug Metabolism & Delivery, Introduction to the Molecular Basis of Disease, Cancer Chemotherapy, Molecular Aspects of Complex Diseases, Modern Approaches to Drug Discovery and Metals in Medicine. Applications to unseen problems and case studies in workshops. Formative activities include workshop assignments and summative assessment is through a computer-based		Molecular graphics workshop; summative assessment through a computer-based workshop using software to visualise active site-drug interactions and related report (Modern Approaches to Drug Discovery)	Learning support workshops; formative assessment through supported workshop activities with summative assessment of written work covering complex, specialised chemical topics through an assessed report based on modelling/molecular graphics software and examination.	

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Developing professional modes of behaviour, with respect to sharing resources, learning and adhering to standard laboratory practice, and working well with others	

Working on practical experiments individually, in pairs, and in small groups. Implicit assessment through summative assessment through laboratory reports.	

Developing professional modes of behaviour, with respect to sharing resources, learning and adhering to standard laboratory practice, and working well with others	

Working on practical experiments individually, in pairs, and in small groups. Implicit assessment through summative assessment through laboratory reports.	

Developing professional modes of behaviour, with respect to sharing resources, learning and adhering to standard laboratory practice, and working well with others. Team working and presentations in a business context. Commercial awareness and creativity in chemical solutions to real-world business exercises.	

Working on practical experiments individually, in pairs, and in small groups. Implicit assessment through summative assessment through laboratory reports. Working on problems through the Group Exercise including peer assessment of teamwork in industrially-derived case studies. Teamwork, commercial awareness and creativity and communication skills summatively assessed though team minutes, executive summary and	

Developing professional modes of behaviour, with respect to sharing resources, learning and adhering to standard laboratory practice, and working well with others	

Working on practical experiments individually, in pairs, and in small groups. Implicit assessment through summative assessment through laboratory reports.	

Commercial awareness and creative solutions in biological and medicinal chemistry	

Application of genetic and protein engineering to commercial activities in industrial/medicinal production through formative case studies and workshop activities, and summative assessment through assessed workshops.	

Commercial applications of cutting-edge chemistry; creativity in research and applications	

Application of Supramolecular chemistry to commercial activities in industrial/medicinal chemistry through formative case studies and workshop activities. Introduction to research topics through lectures and formative case studies and workshop activities.	

Commercial applications of cutting-edge chemistry; creativity in research and applications	

Application of Main Group chemistry to modern materials through formative case studies and workshop activities. Introduction to research topics through lectures and formative case studies and workshop activities.	
Commercial applications of cutting-edge chemistry; creativity in research and applications	

Application of materials and nanochemistry to commercial activities in device and advanced materials technology through formative case studies and workshop activities. Introduction to research topics through lectures and formative case studies and workshop activities.	

Problem solving, time management and team working during research projects. Creativity in research.	

Research Project. Students experience anindependent project experience within a research group or as a small group working on related topics involving engagement with planning, time management, teamwork and interpersonal communication with a range of Departmental staff and co-workers. Formative feedback available through academic supervision with summative assessment of outcomes implicitly assessed through overall productivity	

Applications of cutting-edge biological and medicinal chemistry; creativity in research and implications for future affordable and effective treatments	

Application of research at the interface of biological and medicinal chemistry to current and future therapies through formative case studies and workshop activities. Introduction to research topics through lectures and formative case studies and workshop activities. Summative assessment of modelling of molecular interactions on drug design through assessed workshop.	

Overview of modules by stage

Notes:

[1] The credit level is an indication of the module's relative intellectual demand, complexity and depth of learning and of learner autonomy (Level 4/Certificate, Level 5/Intermediate, Lev

[2] The credit value gives the notional workload for the module, where 1 credit corresponds to a notional workload of 10 hours (including contact hours, private study and assessment)

[3] Special assessment rules (requiring University Teaching Committee approval); P/F – the module marked on a pass/ fail basis (NB pass/ fail modules cannot be compensated); NC – the

[4] Independent Study Modules (ISMs) are assessed by a dissertation or substantial project report. They cannot be compensated (NC) and are subject to reassessment rules which differ

Core & option module table (add additional rows as required)

Stage	Core/ Option	New/	Module title	Module code	Credit	Credit	Prerequisites,	Assessment rules
1	Core	Yes	Core 1: Fundamentals of Chemi	CHE00015C	4	30		
1	Core	Yes	Core 2: Chemical Properties and	CHE00016C	4	30	Core 1	
1	Core	Yes	Core 3: Molecules and Reaction	CHE00017C	4	30	Core 1	The assessed
1	Core	Yes	Skills for Chemists	CHE00019C	4	10		A diagnostic
1	Core	Yes	Practical Chemistry	CHE00018C	4	20		The module is
2	Core	Yes	Core 4a: Molecules in Action	CHE00016I	5	20	Chemistry Stage 1 modul	Safety Pass/Fail
2	Core	Yes	Core 4b: Theory, Analysis and M	CHE00017I	5	20	Chemistry Stage 1 modul	The 'no
2	Core	Yes	Core 5: Reactivity	CHE00018I	5	30	Autumn term Chemistry s	The 'no
2	Core	Yes	Core 6: Spectroscopy and	CHE00019I	5	30	Autumn term Chemistry	The 'no
2	Core	Yes	Genes to Proteins (GP)	CHE00021I	5	20	Chemistry Stage 1 Modules, or by special permission of module coordinator	
3	Core	Yes	Core 7: Advanced Concepts	CHE00026H	6	20	Chemistry Stage 2 modules	
3	Core	Yes	Core 8: Synthesis & Structures	CHE00027H	6	20	Chemistry Stage 2 modules	
3	Core	Yes	Core 9: Compounds & Materials	CHE00028H	6	20	Chemistry Stage 2 modules	
3	Core	Yes	Chemistry and Disease (CD)	CHE00030H	6	20	Chemistry Stage 2 modules, or by special permission of Module Coordinator	
3	Core	Yes	BSc Research Project	CHE00033H	6	40	Chemistry Stage 2 modules	

vel 6/Honours, Level 7/Masters)

module cannot be compensated; NR – there
from 'taught modules'. Integrated Masters

Timing of module	Format, contribution to
AuT	85% exam SpT and
SpT, SuT	85% exam SuT and
SpT, SuT	85% exam SuT and
Year Long	30% exam SpT, 30%
Year Long	P/F skills test AuT,
AuT	80 %exam SpT, 20%
AuT	80% exam SpT, 12.5%
SpT, SuT	70% exam SuT, 10%
SpT, SuT	55% exam SuT, 30%
SpT, SuT	80% exam SuT, 20% assessed workshop SpT
Year Long	85% exam SuT, 15% workshops SpT
Year Long	85% exam SuT, 15% workshops SpT
Year Long	100% exam SuT
AuT	80% exam SpT, 20% workshop AuT
Year Long	87.5% project report/execution/lit review (45:40:15)