

UoM Science Curriculum Summary – U1/P1, U2/P2, and U3/P3 (September to June)

Session	Summary of Content
Welcome to the Science PGCE	An introduction to the course. Overview of the university content and school placements. The importance of professional expectations of trainees.
Lesson Planning 1	Understanding what lesson objectives and learning outcomes are. How these can be used to clarify what trainees want the students to be able to do/to know/to explain/ etc. The use of learning outcomes to inform planning, including assessment of progress. Using Bloom's Taxonomy to support a hierarchy of demand in planning.
Microteaching 1	Trainees' initial teaching episode: trainees introduce themselves to their peers by teaching a skill related to their interests. The focus is engagement and active learning.
Biology, Chemistry, and Physics Pedagogy sessions (ITAP 1-7)	The subject pedagogy sessions cover a broad range of approaches to pedagogy, including strategies applicable to all science specialisms alongside those specific to Biology, Chemistry, or Physics. These sessions also consider the safety and management of students in laboratories and during practical work. Pedagogy sessions form a central plank of our ITAP programme; trainees have a key role in delivering practical aspects of the sessions in their specialism.
Microteaching 2 (ITAP 8)	Trainees' initial Science teaching episode. Trainees teach a curriculum topic of their choice to their peers. Tutor and peer feedback is used to identify strengths and initial areas for development.
The Road and monitoring progress	How progress throughout the PGCE will be monitored and how to record evidence for this. Introduction to the Progress Matrix and considering initial action points.
How young people learn (ITAP 9)	An introduction to the range of theories of learning which underpin classroom practice.
Introduction to Behaviour for Learning (ITAP 13 with EPS)	Develops understanding of and approaches to positive behaviour management. Explores how behaviour for learning is linked to planning, student engagement, and appropriate teaching and learning strategies. This session also explores possible reasons for negative behaviour and the importance of addressing this proactively.
Big Ideas for Science (ITAP 9)	Introducing the KS3 National Curriculum. Develop an understanding of the curriculum structure and how the Big Ideas in Science flow through it.
Lesson Planning 2	Detailed consideration of how to structure lessons (inc. starters and plenaries). Using the UoM planning proforma to provide structure and the sequencing of activities. Trainees plan a lesson on a

	topic from within their specialism and share with peers for feedback. How paired planning with experienced colleagues can support trainees' development in this area.
Introduction to Assessment for Learning	This session explores the purpose of AfL and introduces a range of common approaches. Includes the role of questioning to assess progress and the importance of understanding of students' misconceptions.
Lesson Planning 3 (for CT Day) (ITAP 10)	Trainees pick a topic from the brief and plan a 60-minute lesson with a focus on questioning and misconceptions (for CT day).
Observing others teaching	The importance and role of observing others throughout the PGCE. Trainees observe a pre-recorded lesson using the UoM observation proforma to guide their thinking. What feedback would they provide, why?
Introduction to Adaptive Teaching in Science (ITAP 11)	What is adaptive teaching and why is it important? How can these approaches be applied in Science teaching.
Collaborative Teaching Day (ITAP 12)	Tutor groups each visit different schools for the day. Trainees work in small groups to deliver KS3 lessons focussing on the use of questioning to explore students' misconceptions.
Auditing your Subject Knowledge	Reflecting on trainees' subject knowledge across all science specialisms. Auditing current subject knowledge to identify development areas. How to address perceived gaps.
Enquiry-based Learning in Science 1	Enquiry-based learning in Science 1: An introduction to science education as a practice, centred around arguing and critique, involving investigating the real world and developing explanations and models (Osborne, 2014).
Voice Coaching	The use of the voice in the classroom (this can be followed with one-to-one classroom sessions during teaching placements).
The Nature and Purpose of Practical Work (ITAP 14)	Why do we conduct practical work in science? What even constitutes as practical work? This session allows us to think more deeply and more critically about the purpose behind using practical work to engage and enhance your students' learning; allowing for more successful and meaningful practical lessons.
Cognitive Science in the Classroom - Introduction	Introducing cognitive science approaches in the classroom. Includes: Spaced Learning, Interleaving, Retrieval practice, Managing cognitive load, and Dual coding. Examples how these can be employed in the classroom are discussed. A critique of all approaches is encouraged.

Safety in Science Labs (links to ITAP 14)	Keeping students safe in labs and during practical work. Developing awareness of the statutory guidelines and the responsibilities of teachers in hazardous settings. How to ensure practical work is safe while engaging students.
Enquiry-based Learning in Science 2 – The Sustainability Challenge (ITAP 15)	Create, develop, and present a practical investigation through which pupils can apply and develop their scientific thinking and practice on an issue relating to sustainability. Consider the importance of helping young people to position themselves as scientists working towards a more sustainable world. Provide guidance for teachers.
Student Data in Science	What forms of data are available to teachers? How can we use data to inform planning and teaching.
Additional Learning Needs (students' experiences)	The importance of differentiation and removing barriers learning from the students' viewpoint. The experiences of education of those with additional learning needs.
The Future of Science Teaching and Decolonising the Curriculum	If much of the science that we teach in the curriculum is dominated by white male privilege, then this session is about exploring other perspectives – science as an international and connected activity, with historical roots in many civilisations and parts of the world. Identifying examples and opportunities in the KS3 curriculum. Planning lessons which challenge young people's assumptions about the who, when, where, and how of science.
Rethinking Classroom Talk and Diagnostic Questioning	A critical reflection on the talk that goes on in our classrooms. Is it meaningful? How can we get the most out of classroom talk? We explore the idea of dialogic teaching and learning whilst reflecting on our own practice and experiences so far. Looking ahead, how can we use talk to improve the students' understanding; tease out misconceptions; and develop oracy skills?
Environmental and Sustainability Conference (ITAP 18)	This PGCE-wide conference is led by trainees to discuss and explore the importance of and approached to climate justice in secondary schools.
First Appointments	Applying for your first teaching job; the application process and what to expect from interviews. Mock interview practice.
Rosenshine's Principles of Instruction, session 1	Independent study session guiding trainees through an introduction to Rosenshine's Principles. Exploring the application of these approaches in the classroom.
Gender and Diversity in Science Education	A session to explore and discuss the challenges associated with gender and diversity in science education. How can we better understand and address these?
Medium-term Planning	Understand the value of medium-term planning with your classes, to strengthen progression, enrich

	your lessons with e.g. enquiry, numeracy, sustainability, decolonising the curriculum, dialogic teaching.... Reflect on the value of a simple framework, including a series of rich questions for the topic. Share your current practice and reflect on what you can learn from colleagues.
Post-16 Day (ITAP 16)	Tutor groups visit different 6 th Form Colleges to work with students in the lead up to mock examinations. The focus is to use exam papers to revise key concepts and to support students in applying their knowledge to exam-style questions.
Subject Associations 1 – RSC and IoP support for specialists and non-specialists	The support provided by the Royal Society of Chemistry to promote high-quality teaching and learning. Strategies and materials for both specialist and non-specialist Chemistry teachers.
The Ofsted Research Review	Exploring literature in science education. Exploring factors that can contribute to high-quality school science curriculums, assessment, pedagogy.
Practical demonstrations (ITAP 17)	Trainees prepare a short practical demonstration to their peers. This can be something on which they would feedback/advice, or a demonstrating they will be doing in school and would like to rehearse in advance. Alternatively, this could be an activity they have found works well and would like to share with others. Trainees film their demonstrations to help reflect on and develop their presentation/demonstration skills.
Rosenshine's Principles of Instruction, session 2	Further development of the application and purpose of Rosenshine's Principles.
Evaluating and promoting student progress.	Trainees redesign their lesson planning proforma with an emphasis on medium-term planning and how they intend to monitor and evaluate the progress of their pupils.
Pupil Voice Enquiry Assignment – Ethical considerations	What are the ethical considerations that need to be considered when conducting the Pupil Voice Enquiry? Trainees work with peers and tutors to complete a draft of their research proposal. This is required by 20.3.24 to allow data collection for the PV assignment.
Identifying your strengths and reviewing progress	Overview of U3/P3. Introduction of tasks for the trainee-led conference at the end of the March teaching week. Trainees are required to present to their colleagues on an area of their development which they feel has led them to make progress.
Individual tutorials – review of U2/P2	Individual tutorials to allow trainees to reflect in detail on the progress during U2/P2.
Practical demonstrations (ITAP 17)	Trainees present a short practical demonstration to their peers and receive feedback. Filming is available to allow trainees to reflect on and develop their presentation/demonstration skills.

Small group tutorials – planning for U3/P3	Small group tutorials for trainees to consider their priorities for P3. Targets are informed by P2 and by their aspirations for their first teaching post.
Planning Education Visits	In small groups, trainees attend a local museum (Manchester Museum, MOSI, Catalyst, etc) to plan an educational visit that has purpose and supports the curriculum. This is presented to peers.
Learning outside the classroom and Connectionist Science	How do we show our students' the Science in their lived experiences? Introduce Connectionist Science visits and presentations (for 5.6.24).
End of course/Transition Placement tutorials	End of course/transition placement tutorials (with individual tutors). Trainees and tutors review progress throughout the PGCE and identify areas to focus on during the ECT years. The focus of the transition placement and the draft PDP is discussed.
Connectionist Science Presentations	Trainees present their work on Connectionist Science to their peers.
EPS Conference – Pupil Voice	Trainees present their PV research to the entire cohort in the form of a research conference poster.