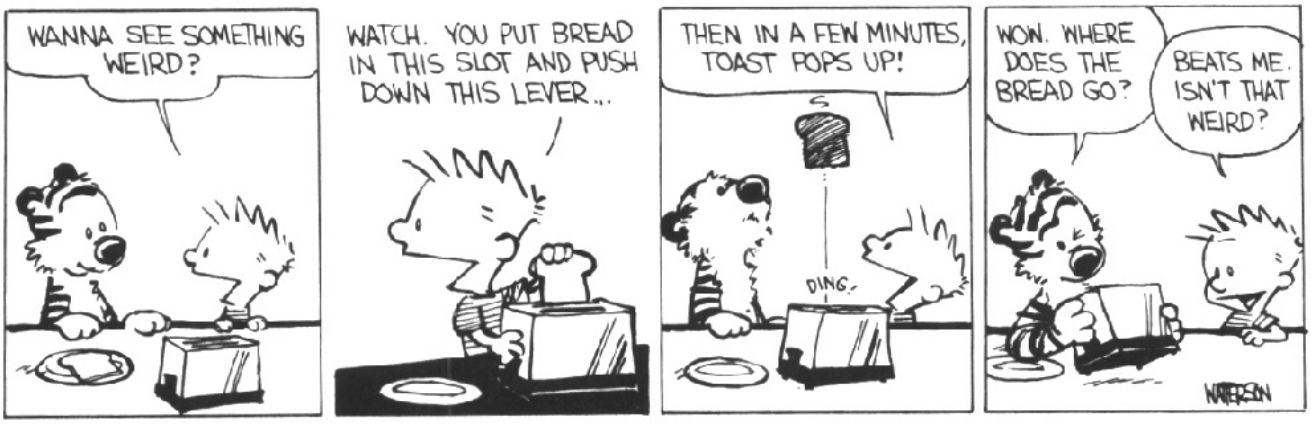
GRADUATE SCHOOL OF EDUCATION

College of Social Sciences and International Studies

PGCE SECONDARY SCIENCE HANDBOOK

ACADEMIC YEAR 2020-2021



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1 WELCOME

Welcome to the PGCE Secondary Science course. We hope you will enjoy what will be a challenging and exciting year. Our aim is to support you in your development as outstanding teachers. The PGCE secondary science course at Exeter is designed to help you to understand how pupils learn science and how you can teach it effectively, safely and in an interesting way to secondary school pupils of all ages and abilities. Both university-based and school-based elements of the course are essential in achieving this aim, and we encourage you to be analytical, creative and critical about what you are learning through both course components and how they relate to each other.

This Study Guide should be read in conjunction with the Secondary PGCE Programme Handbook[1] and the Secondary Education and Professional Studies (or EPS for short) Material [2] which contain detailed information about all aspects of your PGCE and information about University of Exeter procedures. Please refer to the Secondary PGCE Programme Handbook for everything other than subject specific guidance and to the Module Descriptors for the module aims and intended learning outcomes.

Education policy changes regularly and rapidly and we aim to prepare you to become adaptable teachers who are able to respond thoughtfully and creatively to such changes. Schools and teachers are adjusting to the new Ofsted Education Inspection Framework (EIF) this year: you will need to participate in debates about these changes and others, and what they mean for pupils learning science. Science is a core subject in the curriculum and is seen as being crucial to the UK's economy. However, uptake of Science in post-compulsory education remains problematic. We aim to train science teachers who will inspire all pupils to engage with science, whether they intend to be scientists or not.

The wide variety of taught sessions alongside the range of teachers you work with in schools will ensure you see and experience a range of different approaches to teaching and learning science. Some of these will deliberately model good school classroom practice, whilst others use approaches designed for University study. Please be thoughtful about these experiences and use them to think about *why* the material is being taught in these particular ways. This reflective approach underpins the 'Exeter Model' and we expect you to capitalise on all opportunities to reflect on teaching and learning. Critically reflective thinking to understand not just *how* to teach science, but *why* different approaches are effective, underpinned by research, is fundamental to your development as an independent, innovative science teacher who will continue to learn throughout their career.

We hope you enjoy a varied, interesting and exciting year and wish you luck in your learning.

Luke Graham, Darren Moore, Lindsay Hetherington, Jill Noakes, Justin Dillon, Nasser Mansour

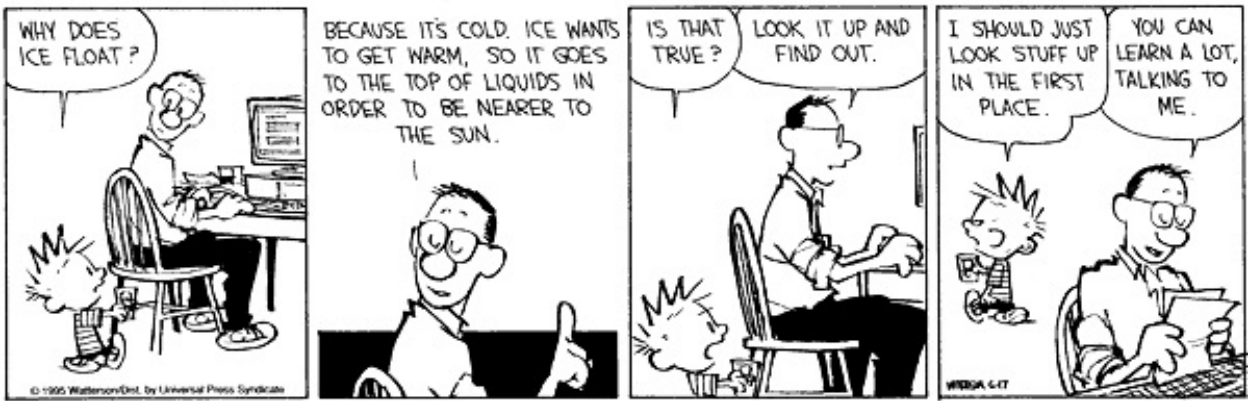
[1] Available here Password exeterpartner
http://socialsciences.exeter.ac.uk/education/partnership/handbooksreportsanddocuments/secondary/
[2] https://vle.exeter.ac.uk/course/view.php?id=8796#section-1 use your Exeter login

2 PGCE SCIENCE TEAM

The course is taught by a team of experienced University staff, specialising in a wide range of science subjects. The core University team is ably supported by associated University Visiting Tutors who are all experienced teachers of science.

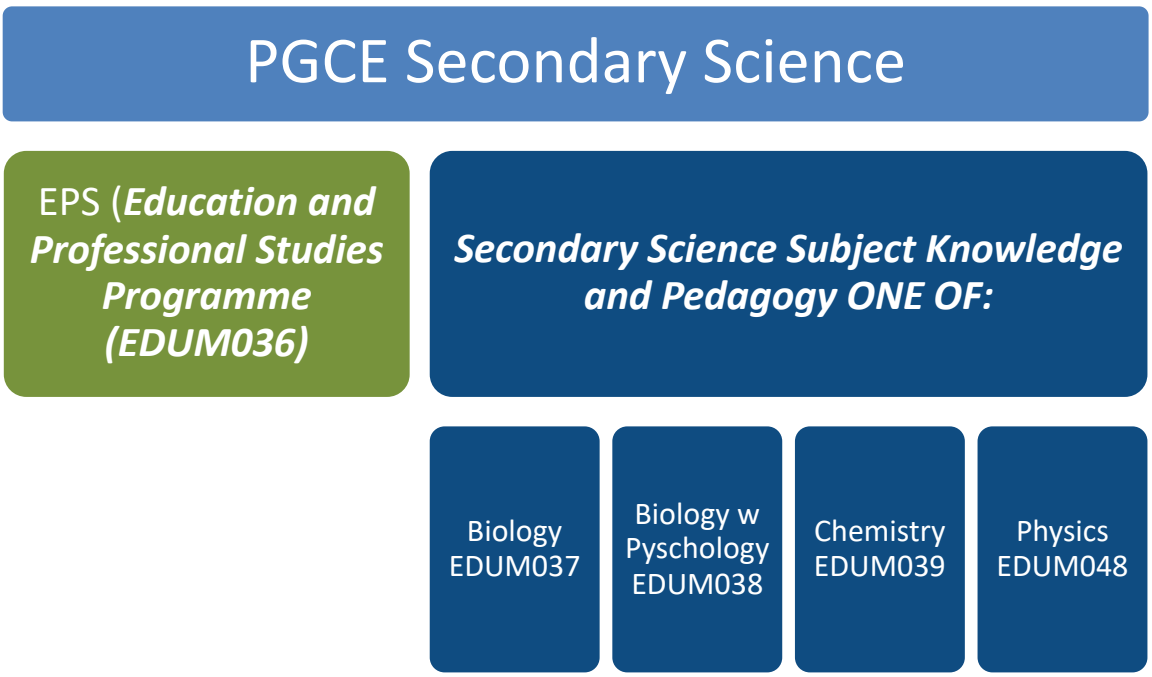
Name	Role	Biography	Contact
Luke Graham (LG)	PGCE Secondary Science Course Leader and Biology tutor	Luke has spent over 20 years working in schools and colleges along the south coast. He has been a science teacher, head of department and deputy head in that time. Luke has worked with the University of Exeter for the last 7 years. He is an associate for the exam board AQA and served as an appointed member to the National College for Teaching and Leadership. He is completing his PhD in Education, looking at the impact of disadvantage in science education.	L.Graham@exeter.ac.uk @bettermaths 01392 724789 NC125
Dr Darren Moore (DM)	PGCE Secondary Science and Psychology tutor	Darren taught Psychology at an FE College for 6 years. He joined the PGCE team while completing a PhD in Education at the University of Exeter researching the transitions of hard to reach pupils at the end of Secondary School. Since completing his PhD in 2011, Darren has combined contributing to the PGCE programme with research work at the University of Exeter Medical School and more recently in the Graduate School of Education, primarily researching school mental health.	D.Moore@exeter.ac.uk @darren_a_moore 01392 727405 NC135
Professor Lindsay Hetherington (LH)	Head of Initial Teacher Education and Chemistry tutor	Lindsay taught science in state comprehensive schools for 5 years and was Head of Chemistry and Deputy Head of Year, before moving to Exeter University to join the PGCE team and complete a PhD in Education. She is currently researching creativity within Science Education, the role of the material in teaching and learning science, and the implications of an ecological view of teacher agency on teacher development and retention. .	L.Hetherington@exeter.ac.uk @lindsayhether 01392 725826 NC124
Jill Noakes (JN)	PGCE Secondary Science and Physics tutor	Jill taught physics and maths in Cornwall after completing her PGCE here at Exeter. She began her career at Bodmin College and was a deputy faculty leader at Truro College. She has also worked for the Institute of Physics delivering professional development workshops in schools around the region. She is currently in the final year of her PhD about project-based STEM activities and the development of staff and pupil agency.	J.noakes2@exeter.ac.uk
Professor Justin Dillon (JD)	PGCE Secondary Science tutor	Justin taught science in six London schools before joining King's College London in 1989 as a teacher educator and researcher where he spent 26 years. Justin is currently President of the National Association for Environmental Education and a trustee of the Council for Learning Outside the Classroom. He has written many chapters aimed at trainee teachers.	J.S.Dillon@exeter.ac.uk @JustinDillonUoE 01392 724912 BC102

Name	Role	Biography	Contact
Dr Nasser Mansour (NM)	PGCE Secondary Science tutor	Nasser qualified as a teacher in Egypt before going on to study Education at Tanta University, Egypt and at the University of Exeter. His research is focused around Science teachers' beliefs about education and he regularly presents at international conferences.	N.Mansour@exeter.ac.uk 01392 722842 BC108
Simon Beard Lorraine Becker Lyndsay Chell Andrew Maxwell Willie Young	University Visiting Tutor	All our associated UVTs have had substantial experience teaching science and leading science departments in the UK. They have all been Subject Tutors in school (PSTs) and are very familiar with the Exeter model. They have a great deal of wisdom to share.	s.beard@exeter.ac.uk l.becker@exeter.ac.uk l.chell2@exeter.ac.uk a.maxwell@exeter.ac.uk w.j.young@exeter.ac.uk



3 COURSE STRUCTURE

The PGCE secondary science course has several distinct but related elements:



Education and Professional Studies Programme (or EPS) (code EDUM036)

The Secondary Programme Handbook and Education and Professional Studies Handbook provide details of this module. It includes both university and school-based work for all secondary trainees. This programme is arranged in five themes. You are expected to access lead lectures below and we have created a timetable with a suggested order.

This is in the Course Information section of ELE, under the heading

Directed Tasks

This EPS timetable will be completed by the whole secondary cohort. These lectures are available on the link below .. You are also asked to engage in self-study by listening to some online mini-lectures on topics within a theme. You will need to access these mini-lectures via ELE here https://vle.exeter.ac.uk/course/view.php?id=8796

It is crucial that you engage with the mini-lectures as directed so that they have been accessed before any associated science session in order that you bring knowledge and understanding to a science session and so we can manage the number of mini-lectures expected at any one time. The date by which you should have completed each set of mini-lectures is on ELE in the Course information tab. (in the EPS lectures and EPS tasks)

There will also be science-specific EPS workshops on some Thursdays and Wednesdays and invited guests, often teachers, will share some of their teaching and learning approaches on different topics

Secondary Science Subject Knowledge and Pedagogy (EDUM037, EDUM038, EDUM039, EDUM048).

The sessions in science are designed to help you to teach broad and balanced science in Key Stage 3 and Key Stage 4 and your specialist subject at post-16 level. It has the following elements:

Science snap lectures	The Monday programme of short lectures during the Autumn Term includes sessions on research informed issues in science teaching. The Snap lecture schedule is in ELE https://vle.exeter.ac.uk/course/view.php?id=9612#section-8
Face to face Classroom Pedagogy and subject specialism	A series of on campus workshops attended with others in mixed subject specialism will address issues connected with subject knowledge and practical work within your subject specialism. In addition to developing your subject knowledge, you will apply a range of teaching approaches and strategies to use in the science lab to promote effective learning.
Online independent work	These non-practical sessions will each take a key teaching and learning theme and introduce ideas to build your pedagogical skills using examples from your own subject specialism. However, the themes covered will be equally relevant for your teaching across the sciences.
Explaining Science: Peer Teaching	Peer teaching gives you the chance to: build confidence by teaching your peers before teaching in school; familiarise yourself with the evidence tools you will use in school; develop your subject knowledge as others teach topics they are confident in. Key Stage 3 and Key Stage 4 sessions are mixed subject specialism groups to help cover the range of science topics. Key Stage 5 sessions are with groups of subject specialists.
Directed Tasks	There are particular directed study tasks to complete, as well as working on your subject knowledge development and independent study towards the M-level assignments.
Seminar Days (From Jan 2021)	At intervals during your main blocks of school-based work, you will return to the university for an intensive training day when you will reflect upon your progress and consider developments in your practice as a teacher. It is also a chance for you to share experiences with peers.

4 COURSE MATERIALS

Teaching resources

You can book materials to use in your peer teaching session. We expect a full week's notice to book them and the process and booking details are available here.
https://vle.exeter.ac.uk/course/view.php?id=9612#section-2

Online Engagement

Much of what we do on the course is grounded in dialogic theories of learning and involves engaging with each other to develop ideas about teaching and learning and their impact on practice. In the online course, this is structured through a range of synchronous and asynchronous lectures, podcasts, interactive tasks and online dialogue with other students on the module, including opportunities for you to lead teaching sessions for each other. For the benefit of all, it is crucial that you engage fully in the online activities to help build both the collaborative dialogues through which we learn, and also the supportive communities that benefit you whilst you are on placement.
You will be expected to mark online activities as 'done' when you have completed them, so that your course tutors are able to monitor your engagement, identify any issues quickly and offer further support where necessary. This also feeds into our ongoing formative assessment of progress against the Teacher's Standards (preamble/Part 2) regarding professional engagement. For some activities, there will be tasks to complete that you will need to upload into your electronic IDP: these will be clearly marked in your module guide and/or online.

The Exeter Learning Environment (ELE)

This is Exeter's Virtual Learning Environment. All course documents and information regarding science taught sessions (this includes EPS sessions on a Thursday for science trainees) will be uploaded here
https://vle.exeter.ac.uk/course/view.php?id=9612
Please get into the habit of checking it regularly and before and after all taught sessions so that you can access preparatory and follow-up materials.

Other useful materials can be found on the following pages:

EPS ELE site https://vle.exeter.ac.uk/course/view.php?id=8796 (for lead lecture recordings, EPS tasks and mini-lectures)
PGCE Primary and Secondary Core Documents
https://vle.exeter.ac.uk/course/view.php?id=9610
Various evidence tools and forms (username and password both: exeterpartner)
https://socialsciences.exeter.ac.uk/education/partnership/handbooksreportsanddocuments/secondary/
Library resources
See
https://libguides.exeter.ac.uk/libraryinduction
https://libguides.exeter.ac.uk/education
https://libguides.exeter.ac.uk/gettingstarted

5 THE TAUGHT COURSE

All Science trainees have the same timetable on the following sessions.

Monday		
9:30-10:15	Snap Lecture 1	See "Snap lectures" below
10:30-11:30	Peer 1 (ks3/4)	You will be in a mixed specialism group and each week some of the group will prepare and deliver a KS3/4 topic from any specialism for the rest of the group. Expect to deliver 3 over the term.
13:30-14:30	Peer 2 (KS5)	You will be in a subject specialism group and each week some of the group will prepare and deliver a KS5 topic from any specialism for the rest of the group. Expect to deliver 3 over the term.
14:30-15:15	Snap Lecture 2	
Wednesday / Thursday		
Some weeks	EPS (Science follow ups)	See "EPS (Science follow ups) " below
Friday		
	EPS	Time available for other asynchronous tasks. Including Education and Professional Studies (EPS) sessions and assignments.

Tuesday , Wednesday or Thursday.

You will be allocated to a group that attends St Lukes on one fixed day in the week. You will have lab sessions lead by the specialist in that subject. In the afternoon there will be a "Classroom Pedagogy" session.

Times	Day in St Lukes	Days not in St Lukes
9:15-14:30	Subject Specialism (Biology / Chemistry / Physics) Classroom Pedagogy	Work on the tasks set for the other 2 subjects. You will log in to the appropriate Teams channel at 11 am on the other 2 days with the pre-tasks completed. Complete the reading and other tasks set. See handbook

Biology with Psychology Only Tuesday

15:00-16:30	

These are synchronous activities. You are expected to attend at the time shown

These are pre-recorded asynchronous lectures that you can watch at any time before the follow up session.

These are where you will work together in small groups, usually they will also be synchronous, but not always.

Independent study

The timetable for Snap lectures and EPS Science follow ups is available here https://vle.exeter.ac.uk/course/view.php?id=9612#section-8

SNAP lectures

Snap lectures will be live twice streamed on a Monday. You are expected to be online for both of the sessions.

EPS (Science follow ups)

You will study the majority of the EPS module asynchronously online and will be directed to watch particular sessions each week and engage in a Q&A discussion with the lead lecturer across the week. In some weeks, there will be some live online sessions focusing on a particular EPS topic in a science context, led by a teacher from a partner school. The timetable for these sessions will be on the EPS tab, and on your university timetable.

Lab-based Subject Sessions

These are Face to Face sessions in the Labs

All science students attend campus sessions on one day each week.
It will be a combination of practical, lab-based session and non-practical, classroom session. These sessions introduce a key pedagogical theme for teaching science.

Biology with Psychology students attend Classroom Pedagogy Sessions as subject specialists and one Psychology pedagogy session per week. These subject specialism classroom pedagogy sessions help to prepare you to teach in your subject specialism to GCSE level. Note that there will also be weekly asynchronous learning on ELE in your specialist subject at post-16. We expect that you will come to the sessions with good knowledge of the subject topics and some knowledge of how they fit the curriculum.

Classroom Pedagogy Sessions

These are Face to Face sessions in the Labs

Each week in the Classroom Pedagogy Sessions there will be a pedagogical focus that will be introduced and examples relevant to your subject specialism provided. The pedagogical topics are below.

Theme 1 Weeks 1-3	Planning for thinking	Questioning	Keeping pupils safe in a lab environment
Theme 2 Weeks 4-6	What makes a good explanation?	Literacy	Teaching for a climate emergency
Theme 3 Weeks 7-9	Sequencing concepts	Numeracy	EAL

6 EXPLAINING SCIENCE: PEER TEACHING

There are further details on the General channel on Teams in the Files tab.
The forms you need are in the file section of the peer group channel
This shows which KS3/4 group you are in and which KS5 group you are in.

In weeks 2-9 there will be the opportunity to practice your teaching, with peers taking the role of willing pupils. This can help build your confidence in teaching ahead of your school placement in December as you will likely have delivered at least three of these sessions by then. Peer teaching has also been very popular with previous trainees as it provides experience in using Exeter Model teaching tools before school-based work, gives a chance to pick up a range of teaching ideas your peers use and helps to build subject and curriculum knowledge as peers deliver topics they are confident in mapped to curriculum or exam specification content. It is critical that you attend and engage in sessions where others are teaching. 'pupils' should be eager to learn, participate readily and be supportive of the "teacher". We will allocate you to your peer teaching groups before October, but we do not expect you to start peer teaching on the first session. It is likely that you will spend this first peer group session introducing yourself and determining the teaching order and the dates for the remainder of the term.
It will be helpful to have access to your subject knowledge audit, exam specifications and any textbooks for this first peer group planning session on the 5th October.

Peer Groups KS3/4

On **Monday 10.30-11.30** you will meet in a group of around 8 with a mix of subject specialisms.
Over weeks 2—9 you will each teach two twenty minute episodes, one on an area of KS3 content and one at KS4.

Peer Groups KS5

On **Mondays, 14.00-15.00, Weeks 2-9,** you will meet in a group of subject specialists. Here, the focus of your peer teaching will be at KS5 in your specialist subject

For each peer groups, you will need to prepare a lesson plan as well as an 'Agenda' for the peer teaching episode. Plan your teaching using the "*Demonstration & Agenda_Pro-forma USE in PEER Teach*" proforma (in the files for the Peer Groups Teams Channel) . Before creating your Agenda, look at the guidance on the Exeter partner site and in the Programme Handbook.
Before your peer teaching, you will need to email / upload a copy of your agenda to one (or more) of your peers or post it in your Teams Channel. One of your peers will then 'annotate' the agenda for you. Make sure that everyone annotates at least one agenda over the eight weeks.

Please remember that you are not attempting to give a whole lesson, or need to deliver 20 minutes that would be the start of a longer lesson – if your lesson segment or "**episode**" would occur in the middle or at the end of a lesson, you can let you 'pupils' know what would have gone before. The idea is to teach a short episode with a particular focus on the aspect of your teaching that you want to improve – see the Programme handbook, page 34, for a list of possible areas to focus on. During the 20 minute episode you should aim to include some content where you are explaining science and also some activity that would help you to assess whether your 'pupils' have understood the topic. Beyond this the delivery is flexible. Since this year the peer teaching has to take place online, it will give you a good experience in learning to teach remotely. You can use a range of tools to support this, including MS Whiteboard in Teams; simulation tools; and OneNote.

At the end of each session, peers should ask any questions they have about the subject content; teachers may wish to invite some specific feedback on aspects of their teaching. You should complete an evaluation part of the 'demonstration and agenda (page 3 of the form) after the episode, thinking analytically about any differences between what you planned to do and what actually happened (ask yourself why something happened, or didn't, and what difference it made). The annotated Agenda will be helpful here. The agenda and evaluation for your first Peer Teaching episode forms one of the directed tasks, see the course information for more details.

The main aims of the teaching session are to increase knowledge amongst the group, practice A Level teaching and to use a suitable learning activity that can then be shared with the group. As a group you will take the opportunity to practice using the evidence tools used in school (the rest of the group will need to complete an observation form briefly).
The content and exact focus of the session is up to the teacher.
But your session should:

Be pitched at A Level
Have learning objectives
Present information designed to increase knowledge of the topic
Include at least one learning activity for your 'pupils' to complete
Check that learning has taken place
Last for no more than 20 minutes, with 10 minutes for questions on the content, and feedback.

Everyone should prepare and teach at least two sessions of 20 minutes during the term in each of the two peer groups. For each session, start by telling the group your specific learning objectives (what you hope the group will learn). Use teaching strategies appropriate for a post-16 group - methods of delivery are likely to vary with different teachers. ***Complete the planning sheet as a group and send a copy electronically to Luke before you start your teaching sessions.***

After you have taught your first Key Stage 5 peer teaching episode you should reflect on the session using the lesson evaluation part of the agenda form *Demonstration & Agenda_Pro-forma USE in PEER Teach*. As with your first KS3/4 peer teach, this evaluation is one of the Directed Tasks.

All the directed tasks are on the Course Information tab of ELE

Term 2 onwards

7 SEMINAR DAYS

Five Seminar Days occur on Fridays during your school-based work. Depending on the situation with COVID-19, these may be on campus or taught online. They provide an opportunity for you to reflect on practice in school with tutors and peers, review taught content in light of working in school, develop understanding of how to conduct school-based research. The content of the seminar days have some flexibility in order to enable us to respond to your developing needs as well as any changes in national education policy and practice. Below is our initial plan for content on each of the seminar days.

Seminar Day	Themes/Sessions
1	Close-to-practice Research - what can it tell you and why is it useful? **(All standards, particularly S3)** This seminar day will consider the use of research to inform practice, in particular your own research to be undertaken for the EPS Assignment. **You will need to bring your draft formative assignment for the EPS Assignment to this session.**
2	Adapting teaching to pupils' needs and to school contexts (drawing on the SEN Task); Analysing research data **(S2, S5)** This seminar day will consider strategies to ensure all pupils make progress in your lessons, and how you can judge what progress is being made. We will also share progress with the EPS SEN Task.
3	Evidence base for teaching; understanding and using research **(All Standards)** This session is focused around an analysis of what makes excellent teaching in Science, drawing on a range of sources to discuss this question. This day will also include critical discussion of research findings and a panel discussion involving teachers using and conducting research in schools.
4	Adapting teaching to pupils' needs and contexts (drawing on the EAL Task); Curriculum planning, sequencing, teaching and impact **(S4, S5)** This seminar day will include sharing experiences of working with support staff, parents, tutees and EAL students. Recent NQTs will also offer advice for your NQT year. The seminar day is likely to be held at a Forest School and consider the opportunities for science education outside the classroom.
5	Being a Teacher - what to expect as an NQT; the Early Career Framework **(All Standards)** During this final seminar day, we will discuss your individual Career Entry Development Profiles (CEDPs) and consider the support you will need to continue to develop as a teacher during your NQT year and early career.

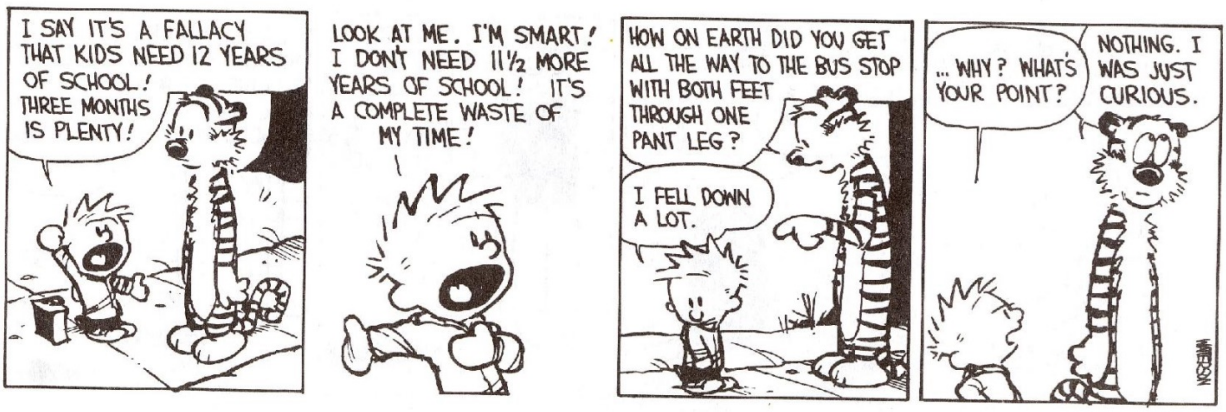
8 DIRECTED TASKS

You will be set a number of tasks which will help to provide feedback about your use of the evidence tools, work you have completed during your November school placement and initial help with securing a teaching post. These tasks are a compulsory part of the course but they are not part of the formal assessment process.

The tasks are on the tutorial tab of ELE (LINK) along with the suggested timeline for completion.

There are five specific PGCE Science directed tasks which are designed to help you make connections between university and school-based content and receive feedback from your personal tutor on key aspects of the Autumn term content. Complete these tasks as appropriate throughout the term.

Task	Requirements
1	**Anticipating Practice tasks**
2	**Key Stage 5 Peer Teaching**
3	**Key Stage 3 or 4 Peer Teaching**
4	**Challenging the Gap Framework for Dialogue**
5	**Securing Employment**



9 MANAGING THE COURSE

The PGCE year is intensive and challenging. It is important, from the outset, to find strategies which will help you to thrive and enjoy the course. The unpredictability and varied nature of teaching attracts many to the career but can also be stressful.

Managing stress:

Stress *can* be a positive thing - it can heighten your responses, help you to think quickly, to act efficiently, to be alert. It can be motivating, help you to feel ready for a challenge - and succeeding within stressful situations is extremely rewarding. You will definitely encounter stressors as a teacher, but as long as you are managing challenges with optimism and enthusiasm for your learning and your teaching, and as long as you feel as though you can cope and achieve, it is likely that this will be positive stress. Feeling nervous or anxious before a lesson or meeting is *normal* and can even be beneficial!

It is important to pre-emptively think about how to manage the demands of the course, and to think about ways of working which best suit you.

Some recommendations:

Be organised from the outset. Set up a clear system for your files – both paper and on the computer – and as far as possible try to operate a 'one touch' policy – respond to and file paper or electronic documents as soon as possible after your receive them, or if you need to come back to them later, develop a system for where you will put these so that you don't forget about them.

Do not underestimate the importance of sleep and exercise - finding ways to wind down and making sure that you get enough sleep are both important.

Try to ensure that you make a clear distinction between work and home life. Set time in evenings and/or weekends where you don't do any work. Consider what activities help you to cope and try to ensure that you make time for them and do them.

Talk to people about stress or challenges – don't feel that you have to cope on your own.

Be selective in your use of social media and notifications. Teachers rarely spend much of their free time in school on their phone. You will need to exercise professionalism and caution in line with the expectations of your role as a teacher but should also think ahead to what the important messages are you want to see when you check your phone.

Avoid perfectionism – the teaching workload will increase gradually and therefore you need to learn when to stop once something is good enough (particularly when creating resources).

Distinguish between free time and independent study time. Particularly in school, there is a need to make the most of time available for planning, marking and evaluating teaching etc, but also make the most of breaks between teaching.

Wellbeing Services

There is information in the **Programme Handbook** pages 74-75 about how to access Wellbeing support at the university. It is worth making yourself aware of the support available now. Much of this is self-help, but if you feel as though you would benefit from some more help please do discuss with your personal tutor or UVT, or get in touch with wellbeing services directly.
https://www.exeter.ac.uk/wellbeing/

If you think you would benefit from an Individual Learning Profile or need any adjustments to the course you must contact AccessAbility. There is information about this in the Programme Handbook.
Please note that information shared with Occupational Health through the Fitness to Teach assessment is not automatically shared with your tutors. It is worth having a conversation with us to check the information we have if you have an ILP or would like any additional support. Occasionally people think that we are aware of their medical history when we aren't!

10 ASSIGNMENTS

You are required to write two formative assignments (1500 words) and two summative assignments (6000 words) during the year. These assignments are assessed at Masters Level and the assessment criteria can be found on page 68 of the Secondary Programme Handbook. A brief outline of the subject knowledge and pedagogy assignments is given below. The Education and Professional Studies assignments are described in the EPS handbook. You will be given detailed guidance about each piece as the course progresses and the guidance will also be uploaded onto ELE. The assignments are intended to blend the theoretical and practical elements of the course.

Both assignments require evidence that you have critically engaged with the literature available. Where you refer to books, journals etc. in an assignment you must use the **APA system for referencing**. Please see the guide on the Assignment Submission Information section of the Primary and Secondary Core Documents page on ELE (http://vle.exeter.ac.uk/course/view.php?id=2516) or this library guide https://libguides.exeter.ac.uk/ld.php?content_id=32456245.

Secondary Science Subject Knowledge and Pedagogy: Autumn Term Assignment

SPECIALIST SUBJECT KNOWLEDGE AND PEDAGOGY MODULE	SUBMISSION DATE	FEEDBACK AND MARKS GIVEN
Formative Assignment (1,500 words or equivalent)	30 October 2020 (to tutor)	Electronic feedback by 16 November 2020
SKP Summative Assignment (6,000 words or equivalent)	05 January 2021	Electronic feedback by 26 January 2021

All trainees will address standards S3, S4, S5 and S6 in this assignment, with further standards addressed depending on choices made in the summative assignment.
The assignment takes place in multiple stages which models a range of different assessment including peer feedback, tutor formative feedback and self-assessment. This means it is crucial to start the assignment early in the term.

Full Details of the Assignment are in the Assessment link on ELE

Assignment Title: Critical Reflective Journal

This assignment requires you to link theory to practice by reflecting critically on different aspects of your teaching, relating your ideas to research that you've read. In each of 2 journal entries, you will need to:

1. Consider the issues, tensions and debates in current educational practice
2. Link your ideas to research and theory, making reference to your independent reading of research and pedagogical literature
3. Reflect on how these ideas relate to any teaching experiences you have had so far

Each entry should be around 3,000 words long, with a total word count of no more than 6,000 words (please refer to the handbook for further information regarding penalties around word counts). You will need to use the first person, but maintain a formal tone. There is guidance on M level writing in week 1 of the online course.

We strongly recommend that you work on your journal entries throughout the autumn term, rather than leaving it all until December.

Education and Professional Studies (EPS) Assignment: Critical Investigation of an Issue in Education

Refer to the EPS Handbook for details of this assignment. The EPS research series of mini lectures will also provide useful background.

11 TUTORING

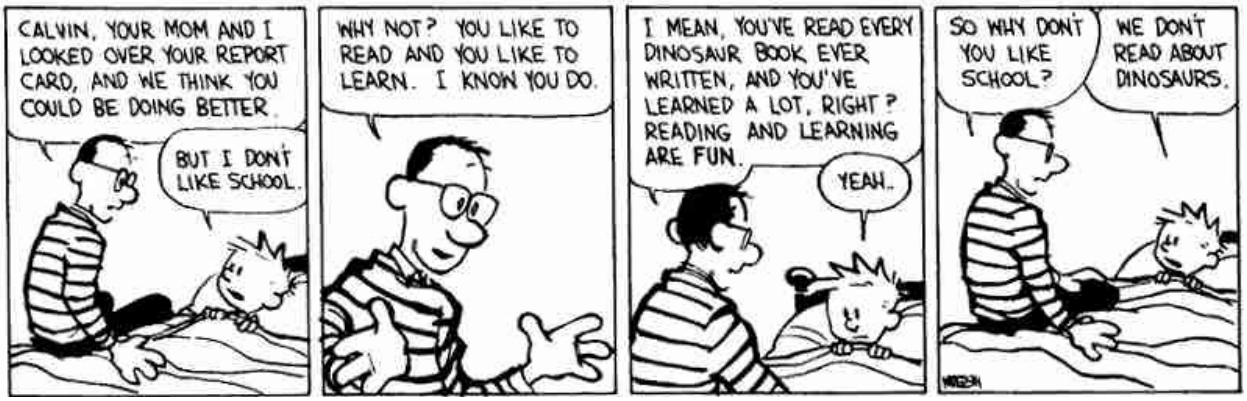
You will have a **personal tutor** who will make contact with you early in the Autumn term.
In the first weeks you will get to know your tutor as they will be also be a teacher on the Science PGCE course.

Later in your individual tutorial you will discuss your Formative Reflection on Achievement and Progress (FRAP) 2 part A draft and work on your Autumn Term Action Plan.

Email FRAP2 Part A to exeterpartner@exeter.ac.uk by Friday 27 Nov and put a copy of FRAP 2 Part A in your IDP to take into school.
The school will submit Part B of FRAP 2 to exeterpartner@exeter.ac.uk by 11 December.

Please remember that we will be supporting you pastorally as well as academically. You should also share any issues you may be experiencing on the course at any point in time. Don't hesitate to contact your tutor in between tutorials if you want to discuss anything.
When you move on to school based work you will have a University Visiting Tutor (UVT) as well as your personal tutor. Your UVT will observe you teaching in your placement schools and liaise with the school in connection with your progress whilst you are in school. Your UVT may or may not be your personal tutor – if not, then both tutors will liaise closely to make sure you receive the support you need.

You can find the contact details for your tutor on our Welcome page or the course information page.



12 USEFUL REFERENCES AND WEBSITES

While this is not a reading list, titles are given under a range of headings to provide you with an entry into the literature for topics that you may want to follow up. In many of the sessions you will also be provided with references to appropriate journal articles. This will provide an introduction to the large amount of education research and specifically science education research that is available. When you are writing assignments it is important to read these journals because they provide details of recent ideas and developments which will not yet be found in books. Some of the journals contain mainly research based reports (e.g. International Journal of Science Education, Research in Science Education) whereas others are more professionally orientated with ideas for use in classroom settings (e.g. School Science Review). Many useful books are available through the library as 'eBooks'. Books below amongst others can be found under the general section of the online reading list

Some relatively recent titles that are aimed specifically at beginning science teachers that you may find helpful are listed below.

Toplis, R. (Ed) (2015) Learning to Teach Science in the Secondary School (4th edition) (London: Routledge)
Wellington, J. and Ireson, G. (2018) *Science Learning, Science Teaching (4th edition)* (London: Routledge)
Osborne, J. & Dillon, J. (2010) *Good practice in science teaching: what research has to say.* 2nd Edition. (Maidenhead, Open University Press)
Banner, I. & Hillier, J. (Ed) (2018) ASE Guide to Secondary Science Education. 4th Edition. (Hatfield: Association for Science Education).
Driver, R. (2014). Making Sense of Secondary Science: Research into children's ideas. (London: Routledge)
Kind V. & Taber, K. (2005) Science: Teaching School Subjects 11-19. (London: Routledge)
Bishop, K. & Denley, P. (2007) Learning Science Teaching: Developing a professional knowledge base. (Maidenhead: Open University Press)

Titles that you will find very useful when writing assignments are:

Bryan H., Carpenter, C and Hoult, S. (2010) Learning and Teaching at M-Level: A Guide for Student Teachers. (London: Sage)
Oversby, J. (Editor) (2012) ASE Guide to Research in Science Education, Association for Science Education, (Hatfield: John Murray)
Somekh, B. and Lewin, C. (2011) Theory and Methods in Social Research (2nd Edition). (London, Sage)
Wilson, E. (2017) School-based Research: A Guide for Education Students (3rd Edition). London, Sage.

https://www.stem.org.uk/secondary-science - this site is building a very large collection of resources for STEM subjects.

http://www.schoolscience.co.uk/ - resources for science teaching put together by the Association for Science Education (ASE)

The CLEAPSS website http://www.science.cleapss.org.uk/ provides a very useful set of resources with a particular focus on health and safety issues. To login to this resource use the current username: silver and the password: fish19 These log-in details will remain active until the end of January 2020. Check ELE for the new log-in details then.

Best Evidence Science Teaching | STEM

Best Evidence Science Teaching. The best teaching draws on the best evidence. Amid increasing calls for evidence-based practice in classrooms, science teachers' lives are usually too busy for them to comprehensively access and implement the best evidence emerging from education research.
www.stem.org.uk

Professional organisations for science teachers
Association for Science Education (ASE): http://www.ase.org.uk/ "Teachers helping teachers to teach science"

What ASE offers ...

ASE is for teachers, advisers, technicians, industrialists and others contributing to science education. It has a membership of over 24,000.

ASE promotes, supports and develops science education from primary through to tertiary levels.

ASE is independent in its thinking and in its finance. It is a registered charity, financed by members' contributions and receives no government funding.

ASE provides a forum for the views of members on science education issues through its regional and national committee structures.

ASE is frequently and regularly consulted by those in authority and in government, industry and LEAs.

ASE offers support, advice and information for individual teachers, schools and local colleges.

ASE offers support, advice and information to those involved in industry and commerce.

ASE offers support, advice and information to other societies and associations with similar aims.

ASE provides many links with industry and arranges teacher secondments, visits to industrial sites, and it supports relevant curriculum support materials.

ASE provides its members with free journals, discount on books, and indemnity insurance.

ASE offers a special discounted membership scheme for trainee teachers. You will be given details and application forms during week 1.

Other Professional Bodies you might be interested in joining – all provide useful resources and journals for science teachers.

- The Royal Society of Biology: https://www.rsb.org.uk/teachers
- The Royal Society of Chemistry (RSC): http://www.rsc.org/learn-chemistry/
- The Institute of Physics (IoP): http://www.iop.org/education/teacher/index.html
- The Association for the Teaching of Psychology: http://theatp.org/

There is a full list of the subject associations and other support organisation on our NQT community website, supporting current NQTs in school.

NQTSW.school.blog