Secondary ITE Subject Studies Curriculum Map

Mathematics 2026/27

Background and Rationale

The LJMU student teacher becomes a critical, research informed, inclusive practitioner. They will be creative, proactive, reflective, with a sense of moral purpose and commitment to the profession. With the mathematics curriculum, focus is given to foundational elements of practice that allow a broad application to be refined in schools where there may be a specific approach required of staff and student teachers. In its delivery, particular attention is given to inclusive and adaptive practice, as well as subject knowledge, such that they are golden threads throughout the delivery of the content of the curriculum.

Each week the curriculum informs practice in spotlighting a focus for student teachers to:

- Inform the observations student teachers undertake of experienced teachers
- Give additional focus (not exclusive focus) of the observation of the teaching of the student teacher
- Inform the content of one of the targets set for the student teacher each week

In the below curriculum, ***'observe and discuss'*** is used to give direction to the student teachers observations of others, to have focussed discussions with those staff, to have this focus on their teaching through the week, and for the student teacher to bring findings and feedback to mentor meetings for discussion. Guidance is also given in the type of target that needs to be set in line with the curriculum's weekly focus, please use professional judgement to align this with the student teacher's needs.

- **Curriculum T**Lesson Planning
- Behaviour Management
- Modelling and Explanation
- Questioning and Misconceptions
- Assessment and Feedback
- Adaptive Practice

Themes

The curriculum intends to provide a robust and coherent series, spiralled in its sequencing in order to develop both subject knowledge and subject pedagogical knowledge throughout the year. There are opportunities to explore competing ideas both in the research and in the experiences, they will have on placement, giving student teachers the criticality needed to inform their practice.

The curriculum is designed around 6 key areas of mathematics teaching and the evidence that supports the practice. They are spiralled throughout the year to be visited as a focus area. These key areas are:

Each time an area is covered it will be in increasing depth and with further research, whilst allowing for personalised approaches and critical thinking in both the literature and experiences on placement. A golden thread of subject knowledge is embedded in each session. In revisiting areas of focus throughout the year, the curriculum aligns with the LJMU phased expectations in being progressive and ambitious for excellent practice, driving the quality of teaching and learning for pupils, whilst being supportive and inclusive for student teachers.

Adaptive Practice

Quality first teaching is the cornerstone of this curriculum with regards to adaptive practice, showing student teachers how inclusive lesson design is achieved, and how this supports all learners. Each element of mathematics teaching will be delivered through the lens of adaptive practice, considering how specific approaches can support or hinder students facing educational disadvantage.

Five Essential Readings

1. Sherrington, T. (2019): *'Rosenshine's Principles in Action'*. Woodbridge, John Catt Educational Ltd
2. Fisher, D. and Frey, N.A.N.C.Y., (2013). *'Gradual release of responsibility instructional framework'* IRA e-ssentials, pp.1-8.
3. Mastery Explained, (2022), NCTEM: Mastery Explained | NCETM
4. Turner, C., Bell, C. and Parson, L. (2025) *'Exploring adaptive teaching with pre-service maths teachers'* Research in Teacher Education, 15 (2). pp. 16-21
5. Barton, C. (2018): *'How I wish I'd taught maths'*. Woodbridge, John Catt Educational Ltd

	Title and Objectives	Essential Reading and Student Activity (pre or post session)	Placement Activity / Focus for GM	PE Links	ITTECF Links
7th September AM	Why are we here?	Developing effective teacher–student relationships: Learning from the experts : My College	Once on placement, start discussions over what type of teacher they want to be, how they want to inspire and motivate pupils	Q1, Q10	1.1, 1.2, 1.5, 1.6, 1.8, 7.1, 7.2, 7.5, 7.6, 8.2, 8.3, 8.7, 8.c, 8.d, 8.e, 8.j, 8.l
11th September AM	What do good maths lessons look like?	Mastery Explained | NCETM	***Observe and discuss*** lesson structures in action, particularly around Rosenshine's principles and I/we/you phases, ***set a target*** around lesson planning – this could be joint planning or completed by the student teacher, not to be delivered, so as to be a low-stakes way of approaching it together	Q2, Q3, Q5, Q9	1.b, 1.c, 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 2.9, 2.a, 2.b, 2.c, 2.d, 2.e, 2.f, 2.h, 2.i, 2.j, 2.k, 4.1, 4.2, 4.5, 4.8, 4.11, 4.b, 4.e, 4.l. 5.h, 7.4, 7.p, 8.b, 8.m
11th September PM	Lesson Planning & how pupils learn maths LO: To understand the features of a good teaching, factoring in how students learn best in maths	Sherrington, T. (2019): *'Rosenshine's Principles in Action'*. Woodbridge, John Catt Educational Ltd			
18th September AM	Teaching Sessions	Skemp, R.R. (1976): '*Relational Understanding and Instrumental Understanding'*. Mathematics Teaching, 77, 20-26	Reflect on lesson structures and common themes. ***Observe and discuss*** how teachers use subject specific language, and insist on it's use from pupils with 'full' answers, ***set a target*** around literacy or oracy in maths	Q1, Q4, Q5	3.9, 3.10, 3.12, 3.n, 3.o, 3.p, 3.q, 3.r, 3.s, 3.t, 3.u, 4.7
18th September PM	Literacy & Oracy in Maths Subject Knowledge in Maths LO: To deliver prepared sessions to pupils in school for the first time, and understand the importance of literacy in maths	Transform Maths Learning with Strategic Oracy Techniques			

25th September AM	ITAP 1 – How do I start lessons in a calm and purposeful manner?	Literature provided by ITAP leads	6 techniques outlined to ***observe and practice*** in starting lessons and doing the starter task; welcoming at the door, front loading expectations, countdown, non-verbal cues, positive framing, staged approaches	Q1, Q6, Q8	Provided centrally
25th September PM	ITAP 1 – How do I start lessons in a calm and purposeful manner?				
2nd October AM	ITAP 2 – How to I model and explain knowledge, processes and skills in my subject?	Literature provided by ITAP leads	Opportunities to ***observe and practice*** board work in various forms, narrating thinking whilst modelling, and how you may interact with pupils whilst modelling	Q2, Q3, Q5, Q6	Provided centrally
2nd October PM	ITAP 2 – How to I model and explain knowledge, processes and skills in my subject?				
9th October AM	ITAP 3 – How do I ask and respond to questions in my subject?	Literature provided by ITAP leads	***Observe and practice*** questioning to probe individual students, address misconceptions and to begin to use mini whiteboards with well-designed hinge questions	Q2, Q3, Q5, Q7	Provided centrally
9th October PM	ITAP 3 – How do I ask and respond to questions in my subject?				
16th October AM	ITAP 4 – Subject Specific 'Chunking'	Literature provided in ITAP paperwork	***Observe and practice*** how chunking topics into small steps impacts lesson plans, directly changes the modelling and questioning with the effort to getting pupils to the end goal of the lesson	Q2, Q3	Provided centrally
16th October PM	ITAP 4				
23rd October AM	Assessment & Feedback	Rakoczy, K., Pinger, P., Hochweber, J., Klieme, E., Schütze, B. and Besser, M., 2019: '*Formative assessment in mathematics:*	***Observe and discuss*** how mini whiteboards are used in maths classrooms. ***Set a target*** to implement mini whiteboards in	Q2, Q5, Q7	6.i, 6.j, 6.k, 6.l, 6.m, 6.n. 6.o, 6.p, 6.q, 6.r
23rd October PM	Assessment & Feedback				

	LO: To explore formative assessment in detail, and briefly summative assessment, with feedback strategies that support learning in the classroom	*Mediated by feedback's perceived usefulness and students' self-efficacy.'* Learning and instruction, *60*, pp.154-165.	solo teaching, giving pupils feedback, and assess its effectiveness		
6th November AM	Inclusive Teaching via Adaptive Practice	Gallagher, M.A., Parsons, S.A. and Vaughn, M., 2022: *'Adaptive teaching in mathematics: A review of the literature.'* Educational Review, 74(2), pp.298-320.	***Observe and discuss*** how small adaptations in lesson planning can support inclusive teaching and see how experienced staff read the room and react to pupils' progress appropriately. ***Set a target*** attempting to make lessons more accessible and adapt for any specific needs	Q1, Q6, Q7	2.6, 4.9, 4.10, 4.c, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.a, 5.e, 5.g, 5.i, 5.j, 5.l, 7.10, 7.l, 7.m
6th November PM	Responsive Teaching LO: To further develop adaptive practice strategies to support different types of learners whilst understanding a need to be responsive to the pupils	Alsina, Á., Pincheira, N., Barquero, B., Sellas, I. and Marimon-Martí, M., 2026: *'Responsive mathematics teaching and mathematics teacher noticing: a systematic review in early childhood and primary education.'* Mathematics Education Research Journal, 38(1), pp.25-50.			
13th November AM	AS2 Briefing	Ball, D.L., Thames, M.H., Bass, H., Sleep, L., Lewis, J. and Phelps, G., 2009. A practice-based theory of mathematical knowledge for teaching. In *Proceedings of the 33rd Conference of the International Group for the Psychology of Mathematics Education* (Vol. 1, pp. 95-98). Thessaloniki, Greece: PME.	***Observe and discuss*** how topics observed and taught that didn't feel as embedded in terms of your subject knowledge as they could have been, ***set a target*** to directly improve an area of subject knowledge not at the required level	Q2, Q3	3.2, 3.3, 3.5, 3.6, 3.7, 3.8, 3.11, 3.a, 3.b, 3.d, 3.f, 3.g, 3.h, 3.i, 3.j, 3.k
13th November PM	Subject Knowledge L.O: To continue to develop knowledge of the curriculum, particularly making links from learning across year groups				
20th November AM	Behaviour Management	Marshall, T., Hoey, T., Rao, N., Taylor, J., George, P., Ghose, S.S., Cosgrove, J. and Patel, N.A., 2024: *'Reducing disruptive and distracting behaviours in the classroom: assessing the evidence*	Thinking about how the student teacher's behaviour management has developed so far, ***observe and discuss*** specific strategies linked to how they can improve. ***Set a target*** around challenging low-level disruption effectively	Q1, Q6, Q8	1.3, 1.4, 1.7, 1.a, 1.e, 1.f, 1.h, 7.3, 7.7, 7.8, 7.9, 7.a, 7.b, 7.c, 7.d, 7.e, 7.f, 7.g, 7.h, 7.i, 7.j,
20th November PM	Behaviour Management L.O: To continue to develop strategies for behaviour management, with a particular				

	focus on challenging low level disruption	*base.'* Psychiatric services, *75*(9), pp.895-907.			7.q, 7.r, 8.4, 8.h
27th November AM	Modelling, Explanation, Questioning & Formative Assessment	Fisher, D.O.U.G.L.A.S. and Frey, N.A.N.C.Y., 2013: *'Gradual release of responsibility instructional framework.' IRA e-ssentials, 3*(3), pp.1-8.	***Observe and discuss*** fluid I/We/You styles that are coherent and well planned and offers pupils a gradual release of responsibility. ***Set a target*** to develop the lesson planning process further in this time where teaching load is increasing	Q2, Q3, Q5, Q6, Q7	2.7, 2.10, 2.g, 3.5, 3.c, 3.e, 3.m, 4.3, 4.4, 4.6, 4.a, 4.f, 4.g, 4.h, 4.i, 4.j, 4.k, 4.m, 4.n, 4.o, 4.p, 5.b, 5.k, 5.m, 5.n, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.a, 6.b, 6.c, 6.d, 6.e, 6.f, 6.g, 6.h, 8.8
27th November PM	Modelling, Explanation, Questioning & Formative Assessment L.O: To explore how the process of teaching flows between modelling questioning and formative assessment				
4th December AM	Medium Term Planning	Resourceaholic: Curriculum Sequencing	***Observe and discuss*** how units of work are structured, how decisions over content covered in each lesson and how sequencing impacts each subsequent lesson. ***Set a target*** around medium term planning	Q2, Q3, Q9	4.d, 7.n, 7.o
4th December PM	MOCK Interviews L.O: To further refine lesson planning techniques and explore the link to medium term planning				
18th December AM	What does a good maths lesson look like?	Teacher Stress - Practical Advice - Education Support | Education Support	This session book ends placement 2a therefore no week following it. Ahead of alternate placement, reflect on how the lesson structures you use have been refined in your home school, and consider how that may change in the next school, or how you would like to see your lessons develop more generally	Q2, Q3, Q5, Q9, Q10	3.1, 3.l, 8.1, 8.9, 8.a, 8.g, 8.n, 8.o, 8.p
18th December PM	Wellbeing, reflection, and looking ahead L.O: To reflect on time so far on the course, how perspectives may have changed, and to consider how to support one's own wellbeing during an intense PGCE				
Alternative Placement - Area for focus each week including observation and one target					

W/C 4th January	**Lesson Planning** - Lesson structures, school & department policies, norms for the student teacher from term 1 and possible methods for progression whilst on this placement				
W/C 11th January	**Behaviour Management** - Strategies used in ITAP 1 (Welcoming at the door, setting expectations, countdown, positive framing, non-verbal cues), school policies, difficulties had at home placement, particularly strong teachers to observe on this placement, routes for development				
W/C 18th January	**Modelling and Explanation** - Live modelling and/or prepared resources for modelling, clarity of explanation and subject knowledge, considerations to develop in this area				
W/C 25th January	**Questioning and Misconceptions** - Cold calling and/or any questioning policies in this school, using pupil's responses both when correct and incorrect, planning for misconceptions including subject knowledge				
W/C 1st February	**Assessment and Feedback** - Using summative assessment methods from ITAP 3, particularly use of mini whiteboards to inform next steps in lessons, live marking, and departmental policies for feedback				
W/C 8th February	**Adaptive Practice** - Adapting planning and teaching to meet the needs of all pupils using methods from all 4 ITAPs and otherwise, specific planning for specific SEND pupils and considerations in lesson design in future				
Return to home school					
26th February AM	Reflection on alternative placement	Ruttledge, R., 2022: *'A whole school approach to building relationships, promoting positive behaviour and reducing teacher stress in a secondary school.'* Educational Psychology in Practice, *38*(3), pp.237-258.	***Observe and discuss*** staff who's behaviour management is strongest around the school, notice what they do out of the classroom and how it influences the respect pupils give the staff. ***Set a target*** to explore behaviour strategies in or out of the classroom	Q1, Q6, Q8, Q10	1.d, 1.g, 7.11, 8.f
26th February PM	Behaviour management and whole school culture L.O: To learn from contrasting experiences and use this to plan ahead. To consider how behaviour can be specific to settings and how important the wider school behaviour and culture is				
5th March AM	Mastery in Maths	https://www.ncetm.org.uk/teaching-for-mastery/mastery-explained/	***Observe and discuss*** how elements of mastery are present in lessons seen, have open discussions with staff in your department, some misconceptions around this. ***Set a target*** to implement some ideas from the	Q2, Q3	2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 2.9, 2.a, 2.b, 2.c, 2.d, 2.e, 2.f, 2.h, 2.i, 2.j, 2.k
5th March PM	Mastery in Maths L.O: To further enhance understanding of Mastery techniques and apply them to best support pupils learning.				

			session (use the website too to support if needed)		
12th March AM	Planning for teaching KS5	Smith, C.A. and Golding, J., 2017: *'Teaching A-level Mathematics in Early Career: Report for the Further Mathematics Support Programme.'*	***Observe and discuss*** a-level lessons (where possible), talk to staff about the implications of teaching KS5 and how approaches may be different to KS4. ***Set a target*** around supporting a-level classes if possible, if not focus on subject knowledge for KS5.	Q3, Q5	3.2, 3.3, 3.5, 3.6, 3.7, 3.8, 3.11, 3.a, 3.b, 3.d, 3.f, 3.g, 3.h, 3.i, 3.j, 3.k
12th March PM	Planning for teaching KS5 L.O: To engage with and understand the differences in teaching A-Level maths				
19th March AM	Teaching A-Level	Smith, C.A. and Golding, J., 2017: *'Teaching A-level Mathematics in Early Career: Report for the Further Mathematics Support Programme.'*	Continue to ***observe and discuss*** with staff who have taught a-level the challenge in subject knowledge in particular for teaching a-level. ***Set a target*** on subject knowledge in a-level	Q3, Q5	2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 2.9, 2.a, 2.b, 2.c, 2.d, 2.e, 2.f, 2.h, 2.i, 2.j, 2.k
19th March PM	Teaching A-level L.O: To support and deliver A-Level maths teaching				
16th April AM	Core Maths	What is Core Maths? - AMSP	***Observe and discuss*** with staff around knowledge of core maths, you may be the most informed person in the department at the time if they don't offer it, if your school delivers it then shadow and engage with the teaching staff. ***Set a target*** to use the more abstract methods that were used in the session in some way in your teaching	Q2, Q3, Q5	1.b, 1.c, 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 2.9, 2.a, 2.b, 2.c, 2.d, 2.e, 2.f, 2.h, 2.i, 2.j, 2.k, 4.1, 4.2, 4.5, 4.8, 4.11, 4.b, 4.e, 4.l. 5.h
16th April PM	Core Maths L.O: To explore Core Maths as a course and the advantages it has for pupils, whilst also using strategies from the curriculum in their teaching of KS3 and KS4				
23rd April AM	Adaptive Practice & Manipulatives in maths	Five ways manipulatives can be used to develop mathematical... | EEF	***Observe and discuss*** the provision for SEN students in your school as well as some staff who may be more inclined to use manipulatives both in their delivery and with pupils (if curriculum allows for this, if not have discussions with staff who would). ***Set a target*** if appropriate to try	Q1, Q6, Q7	5.c, 5.d, 5.f, 5.o, 5.p, 5.q, 7.k, 8.5, 8.6, 8.i, 8.k
23rd April PM	Adaptive Practice & Manipulatives in maths To hone in on maths relevant strategies to support pupils with additional needs of any				

	kind with a particular focus on effective use of manipulatives		and implement some manipulatives in lessons		
30th April AM	What does a good maths lesson look like?	What Could A New National Curriculum For Maths Look Like?	Reflect on your journey of lesson planning and priorities, what did you think at the start of the course and what do you now consider to be most powerful aspects of your lessons, consider the areas where you can focus on and make improvements from now to the end of placement	Q2, Q3, Q5, Q9	3.3, 3.5, 3.6, 3.7, 3.8, 3.11, 3.a, 3.b, 3.d, 3.f, 3.g, 3.h, 3.i, 3.j, 3.k
30th April PM	Sequencing of the curriculum L.O: To recognise the need to understand the nuance in the maths curriculum and how those steps taken are essential to support pupils and enhance their learning. Also to plan ahead for the final phase of the course and what is required				