

Prepared for S217? – summary of responses from student telephone interviews particularly in relation to maths skills

Maths content – most students taking part in the interviews had done the recommended prerequisite modules and so were well prepared in terms of the Maths.

This student was studying Q77 :‘...I would definitely say the maths modules have helped and in some ways prepared, I think for example, I am trying to think what it is called now is it S104? Yes. In there there is some physics bits so energy and light and things like that, but I found doing the MST125, MST124, not I think it was MST125 with the statics and dynamics, in some ways that prepared me much more for the physics that I doing now much, so far anyway in this current module than the previous science, so it has definitely, definitely supported the physics yes.’

One student who had started S207 but then stopped to do the recommended maths module commented

‘...part of the reason for coming off S207 was I felt the maths content at the second level was far greater than what I expected and where I felt I was at that time, so part of the reason for backing off was concentrating on maths and bringing that up to speed. I felt there was a big difference in the first, S104 and S207, S217 there was a big difference in the maths skill set at that, so that’s why I am saying I backed off of that and thought I would just concentrate on that and just build the skills more.

Coming back to the S217 now with an understanding of the maths side I can sort of grasp both now, I can sort of go, I can understand the maths behind it, but this is what it is actually used for and it makes me understand the maths even more if that makes sense,....’

Another student commented

‘having done MST124 last year the maths revision units were literally just that, a revision unit, but I can imagine that if somebody hadn’t done MST124 and didn’t really have much mathematical experience before that they really would have struggled, even with the revision units.’

So students do value the Maths revision guide at the start of the module and perhaps giving access to this and the early units as soon as they are registered on the module would be helpful in giving students a chance to get ahead as some of the comments below suggest that difficulties arise from the amount of content, the step up to level 2, the application of the maths to the physics etc and these may all be helped by students having more time to spend on the first units of the module as well as having the opportunity to check their maths skills.

1) Newtonian Mechanics

Some students commented on difficulties in doing the Mechanics which is the first part of the module. For example one student commented:

‘anything the mechanics side of it because of the maths involved, well I could understand the concepts, the basic concepts around a formula, but trying to apply that to an actual question is where I massively struggled. but when you come to 217 the first half of it is mechanics and there is a lot of maths thrown in it quite quickly and a lot of complex geometry as well and if you haven’t got your head around geometry you do struggle. ’

One student who had health problems that impacted on study time at the beginning of the module commented:

'I struggled with mechanics being mathematical based because it requires a certain amount of manipulation I have had a two year break since my last maths course, which hasn't helped, but I have got my maths for science books with me and I keep going back to them and back to the original course.

If I had had time to go through the whole of the maths revision module that would have helped, so that's the only difficulty I have had is that I haven't really had a lot of time.'

Another student commented

'I really struggled with the Newtonian mechanics, the first seven chapters, to the point where, particularly the chapter7 with torque, that was really doing my head in to a point where I was thinking 'what have I done, this might actually be more than I can actually handle' but in the end I didn't feel, when I was doing the chapters, when I was reading it, it actually made sense but then I started working on the problem questions it was almost sometimes it looked like Chinese and then when I looked at the answers 'OK that makes sense' and then when I moved on to the next problem question I was like 'oh my word, where do I start?' but it did help.. there was one day school about one month in so I went to that one and that did help to get me going on the basics of it anyway. I must say that the Newtonian mechanics was just hard but then it moved on into electricity and magnetism and that I find actually is a lot easier and a lot... '

This student then went on to discuss a key area of difficulty for some students even those who may have felt quite proficient in dealing with the Maths.

2) ***'It is how to apply the maths on the physics.'***

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and Interpreting the questions

Many students commented on this:

'it is actually interpreting those questions and making sense of them initially so that problem solving bit which I find really difficult to get my head round because I have, when I read the question I imagine how things are only to find that it is completely and actually differently when I look at the answer, so I am struggling with that.....

...and the kind of decoding the English that I am reading as well, to try and answer it..

... but it is actually establishing the problem in the first place ...'

Another student who had started an Engineering Degree at another university commented

'Sometimes I haven't got a clue how to answer the question, but as soon as I see the answer to it and then they show me a similar for example talk question then I can answer it, do you know what I mean, but if it just came across something I would obviously have to go through a plan, how to tackle a question, you know like identify all the variables and get all your equations that you would possibly need, draw a diagram.'

He definitely felt the problem strategy helped – *‘Yes, it definitely helps, in the past with like the engineering I haven’t even known what they have wanted me to do. They would ask me a question I wouldn’t even know the first way.’*

Discussions on this area and the problem solving approach gave rise to very positive comments about how this was done in the module and support at the problem solving dayschool. Not surprisingly problem solving is a key skill that is developed in the module so getting to grips with it will be difficult for many students especially at this early point in the module. Many students do struggle to understand what the questions are asking and one student in particular referred to the wording of questions in Unit 2.

During these discussions of these topics - many students requested more worked examples – some asking for more video examples –others for simpler examples that build up in level of difficulty etc.

3) Step up from level 1 to level 2

Several student commented on this :

‘..mean it was a step up in terms of I think you have to be, I guess in S104 guided you every step of the way and MST124 the working, there was a step, everything had a step to it, so you knew where you were going, with S217 I found that steps were missing because it presumed knowledge. It presumed knowledge, so I had to think a lot more and I did have the knowledge from the previous modules, but it made me think a lot more about what I had learnt previously if that makes sense? So it didn’t baby step you all of the way and I kind of like, I understand that know and I know what to expect.’

And also the ‘speed of the module’:

‘the beginning of the modules in the first year seemed to start off really slow and then build up to be more busy but these ones have been you have got to hit the ground running otherwise you are going to fall behind quickly....’