

MATH10222/11222 2017-18: Feedback on feedback ¹

I'm supposed to give you feedback on your UEQ Responses because our management believes that this makes you happy. Having looked through what you said, you seem to be pretty happy already (I've attached the report so you can check!), and I am too. Thanks for the many, very positive comments!

Nevertheless, there were suggestions for improvement, some of which I agree with and will even do something about. Some of the comments I violently disagree with and will tell you (below) why. (Note that some of the issues were mentioned several times, in which case I only quote one of the comments).

- **“Matthias Heil’s early lectures are not clear, with no distinct outcome being communicated to the class”:**

Hmmm... I've commented on this explicitly in the lecture and have explained why I'm teaching the material in this form. Having defined what ODEs are (without assuming any prior knowledge!), it's important to think about what we mean by solutions and what issues arise when we try to find them. For instance, do we even know such solutions exist, etc. Appreciating such issues (and illustrating potential pitfalls via some examples) is far more important than learning (memorising?) methods/recipes for finding these solutions. We do plenty of this in the latter parts of the course, though computers (Wolfram Alpha, say) can do this far better than you (and me!). The title of my first set of OHP slides is called 'Notation, Definitions and "What are the issues?'" and the latter is precisely what these lectures are about. The approach may be unusual (and not to everybody's liking – sorry!) but it's deliberate.

- **“... there is no point teaching us things that aren't on the exam and missing out things that are...”**

I am not aware of missing out anything that's on the exam but I may occasionally take the liberty of assuming that you remember something that you were taught in the first semester, say. However, I'm sure you'll find that I generally assume very little prior knowledge (e.g. integrals, because I can't remember them either).

Re the claim that “there is no point teaching us things that aren't on the exam”, I'm afraid we'll have to disagree. Violently!

- **“I didn't enjoy the mechanics aspects, and I just think they made the O.D.E section needlessly complicated.”**

As I said in the lecture, the mechanics part of the ODEs lecture simply illustrated things that we'd already come across (in a purely abstract mathematical setting) in previous lectures. It is important to realise that maths is a powerful tool that helps to explain phenomena in the “real world”. However, these lectures introduced no “new maths” and it's therefore not clear to me how they could have made anything “needlessly complicated”. I also assured everybody that this material would not be

¹Any feedback on the feedback on the feedback to: *M.Heil@maths.manchester.ac.uk*

examined (by me!); see above for the point (or lack thereof) of teaching material that's not on the exam...

- **Organisation of notes on webpage**

I don't think there's a perfect way of doing this. At the moment the notes simply get added in the order in which they are used in the lecture which hopefully makes it easy to keep track of what's new and what's not. Some people actually thought this was quite a useful way of doing it and I'm not sure any other method wouldn't have its own disadvantages.

University of Manchester
2017-18 Semester 2 Mathematics (UG & PG)

Course: I3034-MATH-11222-1171-2SE-022973: MATH11222 Calculus and Applications A (Physics) 2017-18 2nd Semester

Instructor: Matthias Heil *

Response Rate: 18/30 (60.00 %)

1 - Overall, I would rate this unit as being excellent

Response Option	Weight	Frequency	Percent	Percent Responses	Means			
Agree	(5)	13	72.22%			4.72	4.34	
Mostly Agree	(4)	5	27.78%					
Neither Agree Nor Disagree	(3)	0	0.00%					
Mostly Disagree	(2)	0	0.00%					
Disagree	(1)	0	0.00%					
				0 25 50 100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median
18/30 (60.00%)	4.72	0.46	5.00	3154		4.34	0.88	5.00

2 - The feedback that I received on my work was helpful

Response Option	Weight	Frequency	Percent	Percent Responses	Means			
Agree	(5)	9	50.00%			4.50	4.27	
Mostly Agree	(4)	9	50.00%					
Neither Agree Nor Disagree	(3)	0	0.00%					
Mostly Disagree	(2)	0	0.00%					
Disagree	(1)	0	0.00%					
				0 25 50 100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median
18/30 (60.00%)	4.50	0.51	4.50	3154		4.27	0.96	5.00

3 - This unit was well organised

Response Option	Weight	Frequency	Percent	Percent Responses	Means			
Agree	(5)	11	61.11%			4.50	4.41	
Mostly Agree	(4)	6	33.33%					
Neither Agree Nor Disagree	(3)	0	0.00%					
Mostly Disagree	(2)	1	5.56%					
Disagree	(1)	0	0.00%					
				0 25 50 100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median
18/30 (60.00%)	4.50	0.79	5.00	3154		4.41	0.89	5.00

4 - The course materials were helpful

Response Option	Weight	Frequency	Percent	Percent Responses	Means			
Agree	(5)	13	72.22%			4.72	4.52	
Mostly Agree	(4)	5	27.78%					
Neither Agree Nor Disagree	(3)	0	0.00%					
Mostly Disagree	(2)	0	0.00%					
Disagree	(1)	0	0.00%					
				0 25 50 100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median
18/30 (60.00%)	4.72	0.46	5.00	3154		4.52	0.77	5.00

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Instructor: Matthias Heil *

Response Rate: 18/30 (60.00 %)

5 - The support classes were helpful									
Response Option	Weight	Frequency	Percent	Percent Responses	Means				
Agree	(5)	8	44.44%			4.39	4.30	Instructor	BM Data
Mostly Agree	(4)	9	50.00%						
Neither Agree Nor Disagree	(3)	1	5.56%						
Mostly Disagree	(2)	0	0.00%						
Disagree	(1)	0	0.00%						
				0 25 50 100					
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median	
18/30 (60.00%)	4.39	0.61	4.00	3154		4.30	0.97	5.00	

6 - The eLearning resources provided in this unit were helpful									
Response Option	Weight	Frequency	Percent	Percent Responses	Means				
Agree	(5)	7	38.89%			3.83	4.42	Instructor	BM Data
Mostly Agree	(4)	1	5.56%						
Neither Agree nor Disagree	(3)	10	55.56%						
Mostly Disagree	(2)	0	0.00%						
Disagree	(1)	0	0.00%						
				0 25 50 100					
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median	
18/30 (60.00%)	3.83	0.99	3.00	3154		4.42	0.83	5.00	

7 - Prof/Dr. Matthias Heil's teaching was excellent									
Response Option	Weight	Frequency	Percent	Percent Responses	Means				
Agree	(5)	15	83.33%			4.83	4.40	Instructor	BM Data
Mostly Agree	(4)	3	16.67%						
Neither Agree nor Disagree	(3)	0	0.00%						
Mostly Disagree	(2)	0	0.00%						
Disagree	(1)	0	0.00%						
I have not been taught by this lecturer	(0)	0	0.00%						
				0 25 50 100					
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median	
18/30 (60.00%)	4.83	0.38	5.00	3447		4.40	0.90	5.00	

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Instructor: Matthias Heil *
Response Rate: 18/30 (60.00 %)

8 - What aspect of Prof. /Dr. Matthias Heil's approach to teaching best helped your learning?	
Response Rate	12/30 (40%)
<ul style="list-style-type: none"> • He has great enthusiasm which keeps everyone intrigued. • No nonsense attitude teaching general solutions to almost all forms of ODEs but also the strategy to obtaining these solutions. • dedication • His thorough approach to teaching ODE-solving methods was excellent, and I liked the extras he threw in like the mechanics applications and theory behind the ODEs. He was entertaining and informative, bringing his course to life superbly. • Brings forward interesting questions that otherwise I would have overlooked when studying the material myself. Very Enthusiastic , encourages questions in lecture, very approachable. Good balance of examples and discussion. • He treated us as intelligent humans. • the use of Detailed examples explained thoroughly in lectures helped us fully grasp the concepts introduced. • Very enthusiastic Provided plenty of examples Proper funny • Ansatz • Prof Matthias is very clear and concise in explaining the material and his thought process. His sense of humour is also excellent and of a kind one does not come across often. • His great enthusiasm is contagious • The rigorously and fun way of teaching. 	

9 - Please provide details of what you valued about this unit	
Response Rate	10/30 (33.33%)
<ul style="list-style-type: none"> • Such fundamental maths taught in an excellent way. • Dr. Matthias Heil and how the course finished after only a couple of weeks for me (Maths and Physics student), allowing me to focus on the modules I was struggling with more. • The online materials • I enjoyed learning about the theory behind ODEs concerning existence and uniqueness, and a more rigorous approach to solving ODEs. • An explanation/discussion of where key results come from, their applications (somewhat) and hints of deeper material. • I really valued how much effort Matthias put in to drive the subtleties of the theorems home. And especially how in the last lecture he treated us as competent humans capable of comprehending complex ideas with whom he can have a discussion as equals. (The last lecture was also, unsurprisingly, the most interesting and stimulating one.) • The supervision sheets, which were well designed and complemented the lectures well. • Very interesting • The explanations of the ansatz, giving a better idea of the processes in solving the equations. • It provides a good insight into ODE, I found the Perturbation methods part very useful. 	

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Response Rate: 18/30 (60.00 %)

10 - Please provide details of what you think could be improved on this unit	
Response Rate	9/30 (30%)
<ul style="list-style-type: none">• Get our supervisor a chicken suit :)• N/A, I found this course to be almost perfect for my learning style. Some additional difficult questions and exercises released as exam practice is always appreciated. Maybe some material which is more "interesting" but beyond the scope of the course to engage people's interest more• Nothing to be improved upon here!• Perhaps at the start of the course provide a quick syllabus outline/list of key sections and sub-sections,. Greater variety/more involved Ex.sheet questions.• I think the course would become even more interesting if his approach from the last lecture (or rather its bonus part) was extended over the whole unit.• Don't think there is anything 10/10• Clarification on what was happening with the maths and physics students. I acknowledge I may have missed the part where this was explained.• More physics examples• Increase in level of difficulty.	

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2017-18 Semester 2 Mathematics (UG & PG)

Course: I3034-MATH-10222-1171-2SE-009208: MATH10222 Calculus and Applications A 2017-18 2nd Semester
Instructor: Matthias Heil * ,Richard Hewitt
Response Rate: 115/242 (47.52 %)

1 - Overall, I would rate this unit as being excellent												
Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Agree	(5)	66	57.39%		4.45	4.34						
Mostly Agree	(4)	39	33.91%									
Neither Agree Nor Disagree	(3)	7	6.09%									
Mostly Disagree	(2)	2	1.74%									
Disagree	(1)	1	0.87%									
					0	25	50	100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data	Mean	STD	Median					
115/242 (47.52%)	4.45	0.76	5.00	3154	4.34	0.88	5.00					

2 - The feedback that I received on my work was helpful												
Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Agree	(5)	64	55.65%		4.43	4.27						
Mostly Agree	(4)	38	33.04%									
Neither Agree Nor Disagree	(3)	11	9.57%									
Mostly Disagree	(2)	2	1.74%									
Disagree	(1)	0	0.00%									
					0	25	50	100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data	Mean	STD	Median					
115/242 (47.52%)	4.43	0.74	5.00	3154	4.27	0.96	5.00					

3 - This unit was well organised												
Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Agree	(5)	61	53.04%		4.37	4.41						
Mostly Agree	(4)	41	35.65%									
Neither Agree Nor Disagree	(3)	8	6.96%									
Mostly Disagree	(2)	5	4.35%									
Disagree	(1)	0	0.00%									
					0	25	50	100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data	Mean	STD	Median					
115/242 (47.52%)	4.37	0.80	5.00	3154	4.41	0.89	5.00					

4 - The course materials were helpful												
Response Option	Weight	Frequency	Percent	Percent Responses	Means							
Agree	(5)	66	57.39%		4.45	4.52						
Mostly Agree	(4)	37	32.17%									
Neither Agree Nor Disagree	(3)	10	8.70%									
Mostly Disagree	(2)	2	1.74%									
Disagree	(1)	0	0.00%									
					0	25	50	100	Instructor	BM Data		
Response Rate	Mean	STD	Median	BM Data	Mean	STD	Median					
115/242 (47.52%)	4.45	0.73	5.00	3154	4.52	0.77	5.00					

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Instructor: Matthias Heil *, Richard Hewitt
Response Rate: 115/242 (47.52 %)

5 - The support classes were helpful									
Response Option	Weight	Frequency	Percent	Percent Responses	Means				
Agree	(5)	70	60.87%			4.43	4.30	Instructor	BM Data
Mostly Agree	(4)	30	26.09%						
Neither Agree Nor Disagree	(3)	10	8.70%						
Mostly Disagree	(2)	4	3.48%						
Disagree	(1)	1	0.87%						
				0 25 50 100					
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median	
115/242 (47.52%)	4.43	0.86	5.00	3154		4.30	0.97	5.00	

6 - The eLearning resources provided in this unit were helpful									
Response Option	Weight	Frequency	Percent	Percent Responses	Means				
Agree	(5)	56	48.70%			4.26	4.42	Instructor	BM Data
Mostly Agree	(4)	36	31.30%						
Neither Agree nor Disagree	(3)	20	17.39%						
Mostly Disagree	(2)	3	2.61%						
Disagree	(1)	0	0.00%						
				0 25 50 100					
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median	
115/242 (47.52%)	4.26	0.84	4.00	3154		4.42	0.83	5.00	

7 - Prof/Dr. Matthias Heil's teaching was excellent									
Response Option	Weight	Frequency	Percent	Percent Responses	Means				
Agree	(5)	76	66.09%			4.55	4.40	Instructor	BM Data
Mostly Agree	(4)	29	25.22%						
Neither Agree nor Disagree	(3)	8	6.96%						
Mostly Disagree	(2)	1	0.87%						
Disagree	(1)	1	0.87%						
I have not been taught by this lecturer	(0)	0	0.00%						
				0 25 50 100					
Response Rate	Mean	STD	Median	BM Data		Mean	STD	Median	
115/242 (47.52%)	4.55	0.74	5.00	3447		4.40	0.90	5.00	

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Instructor: Matthias Heil * ,Richard Hewitt
Response Rate: 115/242 (47.52 %)

8 - What aspect of Prof. /Dr. Matthias Heil's approach to teaching best helped your learning?	
Response Rate	58/242 (23.97%)

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Response Rate: 115/242 (47.52 %)

- The methods to solve ODE
- He was very knowledgeable on his subject
- Clear methods and explanations (doesn't spend lots of time on proof & spends more time on application which I like)
- Everything. He is fun and smart. He is the best !
- he was passionate
- Good sense of humour
- Lectures were well presented and stuff explained in a good order. Visualiser notes easy to follow and handwriting legible (contrary to popular opinion!)
- He was very relaxed and chatty which makes it easier to understand what he is teaching.
- he did a lot of examples which made the content easier to understand.
- Engaging, well organised, well presented
- I enjoyed his way of teaching I thought it was engaging and exciting
- Very funny and keeps the audience engaged, which is so important in the 2hr lectures
- Concise and well explained. I also liked his teaching style. Lots of examples always helped which consolidated theory, with each case (where appropriate) explained fully. Humour also helped!
- His enthusiasm, he made the lectures interesting so it was easy to concentrate and therefore quiet understandable.
- The bizarre but amusing examples were funny and kept me really interested. And the witty comments and being able to quiet the back if it was getting loud, but still being quite relaxed with the mood, made things quite comfortable and easy to engage. Entertaining (e.g. Chicken costume) but also informative.
- The enthusiasm
- His enjoyment of the subject and is extra curricular comments
- He was a very engaging lecturer.
- his charisma and enthusiasm was engaging
- Very funny and engaging, made it easier to pay attention
- The methods he gave us were really good and easy to memorize, the lectures were really dynamic and not boring. Almost all the time I managed to understand everything that happened in the lectures (really rare for me). Writing the notes was really good with a lot of examples.
- No nonsense
- He was very engaging and, coupled with his good sense of humour, meant that as someone who has in the past not been a fan of mechanics, I thoroughly enjoyed his lectures. I never thought that I would end up saying that I was looking forward to a mechanics lecture! I also thought the content itself was clearly presented and was presented to us at a reasonable pace.
- At the end of each section or theorem, a brief summary of the content was most helpful
- the lecture notes are really helpful .his humorous teaching way about the boring ODE makes me like his class so much !!!!
- Matthias' poor humour meant that I had no choice but to disengage from the course material. His German accent made it quite hard to understand the material, along with his bad handwriting.
- good pace, well-organised, useful notes and really nice lecturer!!
- good pace, interesting content, challenging example sheets
- Very enthusiastic in teaching, explains very well, one of the best Lecturers I've had this year. Even though the unit "ODE's" isn't particularly interesting for me, matthias made it as fun as he possibly could. 10/10 for everything.
- Detailed explanations of the methods with how they work as opposed to just stating them.
- His enthusiasm
- Engaging style of teaching and thoroughly explained content. Very good.
- clarity was always great, coupled with humour so made all the lectures both engaging and interesting which were all enjoyable.
- Humorous, engaging, down to earth. Really enjoyed his wit and explanations, I hope to get him again. Very achievable expectations of the number of questions to hand in on the question sheets.
- Matthias brings a level of wit to each lecture that helps to engage the whole room like no other. His teaching style is well suited to the course and he makes everything very clear when explaining new concepts

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Response Rate: 115/242 (47.52 %)

- He has a very engaging personality, despite the fact that I thought I dislike calculus, Prof. Matthias Heil proved me wrong and I learned to enjoy his lectures very much. Best lecturer so far!
- Engaging and organised
- Matthias tended to go through examples and allows us to put together a method from scratch without any background knowledge which I thought was more fun and engaging than telling us all and then giving examples. He was also very light hearted which helped to make dense lectures feel less intense.
- He gave many examples and applications along side the theoretical part.
- Very enthusiastic. Provided some of the best lectures I have experienced at uni. The lectures were interesting and enjoyable.
- Explanations, good contact with students, homeworks
- He goes through many examples during the lecture which helps to apply the theorems etc
- Provided lots of examples to demonstrate the methods once he'd explained them, this really helped
- He offers examples which makes those concepts and definitions more meaningful to me.
- No comment
- Sometimes going through the material pretty fast (like he does)forces one to stay focused all along the lectures.
- He was quite "off-track" with his lecturing. This was, for the most part, very insightful and engaging.
- Very enthusiastic, did a lot of examples which helped understand ODEs really well
- YOURE GREAT
- Very engaging lecturer
- The amazing sense of humor!
- I liked the passion for the material that the lecturer showed. Also a great sense of humour and the necessary charisma to keep a two hour long lecture as captivating as a 10 minute talk. Thoroughly enjoyed the content, even moreso because of the excellent teaching. Deserves all the chocolate!
- The worked examples
- I like the atomsphere of his lecture, and his teaching really help me to learn sth more fundamental.
- Very engaging and made you want to listen
- He gradually brought up the difficulty level of the content in a way which was approachable.
- His enthusiasm and his humour made the course fun and interesting and he was more engaging than many other lecturers.
- His teaching style was brilliant, unique and rememberable and the way he's set up his webpage was extremely useful

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9 - Please provide details of what you valued about this unit	
Response Rate	41/242 (16.94%)

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- The application of methods to solve ODEs
- First time using mechanics in the degree course!
- The unit gave me a more thorough understanding of ODEs and their applications than was offered at A level
- There is plenty of challenge which is pitched at the right level.
- A lot of examples are done in lectures. The lecturers didn't strike.
- I really enjoyed the O.D.E part of the course.
- I enjoyed the course content
- V. organised, and very happy this unit wasn't affected by the strikes, thanks
- Very method based, with clear applications.
- The worksheets and solutions are helpful.
- The example sheets; particularly the context of the example sheets. That was probably the best part bar the lecturers comments.
- The content is extremely interesting
- It's clear and wide ranging application, as one would hope from the name of the module.
- useful applications to real life problems
- I enjoy applied maths and think this unit covers interesting material
- Having the lectures notes and also having printed notes at least for the first half help me answer any question I might have. The example sheets were fun and enjoyable. Really well structured everything made sense.
- Lots of examples in class
- It has given me a better understanding of an area of mathematics that I once found to be consisting of formulae that were plucked out of thin air.
- My supervisor, Alice Thompson, conducts supervision classes in such a way that goes over the questions on the sheet but also consolidates concepts taught in lectures, most of which is difficult to understand on a first reading
- the examples given followed each knowledge point.
- Enjoyed the split in the module and that they still linked together (like most maths). Applied supervisor was really helpful and helped understanding. (Erik Garcia)
- I find the content very interesting if challenging and the example sheets enjoyable
- Uploaded materials regarding Existence and Uniqueness, and also an example sheet nearly dedicated to just that! Detailed explanations No disruption from strikes (on the Lecture side) Support / supervision classes very useful + my supervisor Dr Alice Thompson took an hour of her own time to explain how to start an example sheet I was quite stuck with before the supervision class.
- Well planned lectures
- starting to enjoy mechanics which i hated at school
- Really interesting overall. Has shed a lot of all the mechanics and physics I have studied until now. Has definitely made me want to do applied modules and mechanics later in university.
- I just really enjoyed it overall which I didnt expect at first, since I thought me and applied maths dont get along
- The detailed analysis of ODEs and how they work since I had come across them in a simpler form earlier and know they will become even more useful later. Also, how material was shown to link back to set laws very often in the later course.
- Both lectures didn't simply read out their printed notes, and gave different examples with far more explanation, for example they both used a piece of string with a mass on the end to give a physical description of the problem. The lectures were also quite engaging considering we always had long, content heavy 2 hour lectures.
- Useful, got insight in one of the really important applications of mathematics and gained knowledge which can be applied in other important areas too
- The notes provided for the unit were really helpful when it came to revision, especially with Matthias' part of the course as I found it difficult to follow him during lectures. I found the second part of the course to be most intriguing.
- The lecturer did a lot examples and sometimes calculated some questions during the lecture. So we have deeper impression about how to solve those questions.
- Learning about ordered differential equations was quite nice and it was interesting to see how they worked.
- most of it was pretty good.
- THEM
- Was a good foundation to mechanics

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Instructor: Matthias Heil * ,Richard Hewitt

Response Rate: 115/242 (47.52 %)

- Planetary motion!!! So cool. Also all of the physics really. The problem-solving aspect, beginning from a physical situation, is very exciting - cool to build up a real situation within the mathematical realm and manipulate it beautifully in this heaven, to reach a solution which can be transferred to the world of mere mortals and actually be of use there.
- The tutorials helped me the most
- I enjoyed the brutal honesty about the content
- I really enjoyed learning mechanics, it was fun
- Support classes were very beneficial. Sean was great

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10 - Please provide details of what you think could be improved on this unit	
Response Rate	49/242 (20.25%)

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Instructor: Matthias Heil * ,Richard Hewitt
Response Rate: 115/242 (47.52 %)

- Feedback has previously been given on this in years gone by, but Mathias Heil's early lectures are not clear, with no distinct outcome being communicated to the class. It's very confusing for someone who has never studied the topic at A level to be thrown at the deep end with the 'playing around with ODEs' lectures, when it hasn't been clearly indicated that this is the aim. His side of the course appeared much less organised and structured than Rich Hewitt's, with aims not being made clear. More understanding of the objectives would be really beneficial and would help to ease the anxiety that the opening lectures provide
- Summaries of key equations and methods (for finding ODEs especially) would be useful
- First couple of weeks, Matthias solved the ODEs and didn't make it clear that we were not yet expected to be able to solve them, which made the course seem very confusing. By the end of this half of the course however, I really enjoyed his lectures.
- leave the mechanics to Rich
- Better organised notes in the first part of the course
- There is often little to discuss in the supervisions, perhaps having a couple of new questions available would help.
- I often found that Dr Matthias Heil's missed out details that would have been useful to know like little tricks and things to look out for to make the problem easier to solve, and often when he did methods, he would skip a few stages and not explain properly how he got to the answer. I think both lecturers need to remember that the content is new for most of us because most of the time, it felt like they'd started half way through a topic, so the lectures were hard to follow. I think that we need more past papers and that we are taught what we need to know, rather than saying 'I'm not teaching you for the exam' as this is a very stupid thing to say and at the end of the day, we are being assessed by the exam so there is no point teaching us things that aren't on the exam and missing out things that are.
- I didn't enjoy the mechanics aspects, and I just think they made the O.D.E section needlessly complicated. Plus the online test seemed a bit pointless, as we had only just started the mechanics part of the course (we had only one example sheet to use).
- not much
- would have been easier if Prof. Heil had better typed up notes!
- N/A
- Dr Hewitt could be slightly more charismatic in his presentation as often he can make the lectures feel very full which therefore makes it very hard to concentrate. Matthias could have also made a clear distinction between each of the chapters.
- Sometimes the content becomes a little abstract... for example, some terms like "angular momentum" are left as just words next to a derived formula, without an intuitive context around them. However this might be because the course hasn't finished yet and it does actually come up again in future.
- N/A
- In the second half it would be nice if the visualizer slides were available to us on the website in case we get behind making notes.
- Rich could upload the notes he writes in a lecture to his webpage - sometimes I can't read my own handwriting or think I've copied something down wrong and it would be useful to check.
- During the second half we almost didn't do any ODE so I felt like I forgot how to do them. I found mechanics hard as a topic but the second half is not that bad, I wish the notation was more clear sometimes specially with all the r's. I felt like specially the second half the course was going too fast but still good.
- Exam style questions accessible early in the course
- Nothing, this has been my favourite unit of semester 1, mainly due to the presentation of the content.
- The online resources for the first (ODEs) half of the course could be made much easier to navigate (and read)
- nothing needs to be improved ,it's perfect!!!!!!
- ...
- nothing, all good
- feedback on the mid term for Rich's part of the course/ go through this in lectures, supervisions. Also for supervisor to go through all examples if we finish early
- As mentioned in other unit questionnaires, perhaps 2 hour supervision slots so that we aren't as crammed for time. If we don't use all 2 Hours of the slot we have booked in that room, we can leave early or even look at what's covered in the next example sheet, or go through any questions that you may have had from Lectures or previous sheets that you didn't quite get before (maybe non-starred questions!)
- Better online notes
- Maybe in the first part of the course that there is a bit more of a structured layout.
- Can't think of any, great unit, thanks a lot!
- I really am not sure, I think it was very well done overall
- The beginning of the course felt quite messy and I felt questions were worded in a very complex way. Also, later, some material was "extra" but I found it hard to distinguish between what was extra and what was useful.
- Prof Matthias Heil could have organised his notes better online, the list of 1 or 2 page documents on his page was a bit of a mess and some of them grouped together or organised better.

University of Manchester

2017-18 Semester 2 Mathematics (UG & PG)

Course: I3034-MATH-10222-1171-2SE-009208: MATH10222 Calculus and Applications A 2017-18 2nd Semester
Instructor: Matthias Heil * ,Richard Hewitt
Response Rate: 115/242 (47.52 %)

- More example sheets.
- Second half of the course could in some situations provide more background information so we know what is going on in some problems
- I didn't like how the first part of the course was taught. I'm aware that most people enjoyed Matthias' teaching but personally, I struggled to understand what was going on in these lectures.
- While Matthias' teaching was great, and I agree with him that we should be learning from the lectures and revising from our notes rather than his, I feel that a little more organisation with section numbering and similar would help us to do that
- The questions in the example sheet can be more difficult. And I hope Dr. Richard can write a little bit slowly in the lecture to make it more easier for me to catch up with his writing.
- I would like clearer notes that have structure and more help to work out a structure to solving solutions. It is a bit of a minefield in terms of the notes and sometimes jumps are made which can mislead and discourage me from finding out the information I needed. If the notes were clearer it would make the lecturing and the course a lot easier to learn than it has been. I have struggled with this course because of the lack of structure so I would prefer it if it was more neatly organised.
- maybe recommended reading for the second part of the course. And some example sheet questions that uses other units material
- could be more organised on first half of the course in terms of the notes
- Perhaps remove "hints" from exam papers. Some may see it as patronising and making the exams easier on purpose.
- I think there is some discrepancy in the way perturbation methods were introduced in the 1st half of the course and the way they were used in the 2nd half. It was very difficult for me to understand what we were really doing when we talked about stability of equilibrium points. Also, in 1st semester Calculus and Vectors there was very little emphasis on Taylor series around points other than 0, so it was difficult for me to see that this is what we're doing. I believe some small reminder in this course about how these series work would be valuable. Also, I think in the 1st semester Calculus and Vectors course we didn't put enough emphasis on some basic properties of dot and cross product. In particular, I don't think we proved the compatibility of cross product with scalar multiplication, i.e. $r(a \times b) = r a \times b = a \times r b$. It was confusing when we started using this property in the 2nd part of the course assuming it's completely obvious.
- Maybe slightly clearer organisation of the chapters in the second half of the course, e.g label 4.5.1 as the 1st example of the 5th part of chapter 4
- the material In the second part of this course was a bit confusing those of us who haven't done A level mechanics
- More astronomy? Even more rigour (or optional additions) for those of us who are familiar with basic physics and don't want to sit through definitions of elementary laws (Newton, Kepler) and definitions (Yes, we know what the difference between velocity and speed is).
- All good
- Exercise sheets of MECHANICS part, they are pretty much the same as the examples in the lecture. And they are too easy compare t past papers.
- Better online notes for matthias part of the course
- Dr Richard Hewitt could put all the notes online together instead of each week meaning I had to constantly go to the printer as I find the notes help me understand in the lectures
- In the mechanics section the physical implications of the maths could be explained further specifically to do with angular momentum as I find this confusing and I feel understanding the physics would help understanding the maths