Title of Course/Event attended (in chronological order, most recent at top)	Venue & City	Date (dd.mm.yyyy)	Cost (if any)	Brief Summary
Project Management	Leeds university	17.09.2015		Introduction to useful planning, setting realistic goals and allowing for risk with regards to thesis projects.
Writing for publication	Leeds university	21.09.2015		Highlighting the difference between good and bad academic writing. Examples including spotting the easiest to read, how to be concise.
Fluids Seminar	Leeds university	08.10.2015		Computational Polymeric flow – Chinmay Das, University of Leeds
Applied Maths Seminar	Leeds university	12.10.2015		Instabilities of thin coasting on a vertical fibre – John Hinch, University of Cambridge
Astro and Geophysical Fluids Seminar	Leeds university	26.10.2015		Overwash of a thin elastic plate – Tomasz Salwa, University of Leeds
Fluids Seminar	Leeds university	29.10.2015		Rayleigh-Bernard instability by diffusion flames – Phillip Pearce, University of Manchester

Fluids Seminar	Leeds university	12.11.2015		Navier-Stokes-Cahn-Hilliard for complex fluid structure interaction – Harald van Brummelen, Eindhoven University of Technology
Fluids Seminar	Leeds university	26.11.2015		Dynamics of Baroclinic zonal jets – Paul Williams, University of Reading
Meeting with Firedrake development team	Imperial University	04.12.2015		Discussed: Implementing coupled systems, native DGFEM support and use of version control programming
CSE seminar	Leeds university	11.12.2015		Numerical methods for fluid-structure interactions - Yongxing Wang, University of Leeds
Media and Research	Leeds university	15.12.2015		Session on how to write for the general public. Included discussion on procedure for press conferences and which media would be best for types of reports.
Impact: What is it and how do I do it	Leeds university	16.12.2015		Specialised course on the government's impact criterion for research

Creativity@Home	Leeds university	18.12.2015		Workshop about creative thinking with application to research. Included online course to take beforehand.
Astro and Geophysical Fluids Seminar	Leeds university	11.01.2016		3D long wave phenomena – Anna Kalogirou, University of Leeds
Enterprise	Leeds university	12.01.2016 & 26.01.2016		An application of creative thinking leading to products. Met with a few people who made their own start ups. University support mentioned and laid out.
School of computing symposium	Leeds university	19.01.2016		Created a poster for the symposium, attempted to highlight the use of Firedrake and UFL for finite element problems.
Astro and Geophysical Fluids Seminar	Leeds university	01.02.2016		Water wave simulations and experiments using the wave tank built from the MSc team project – Tomasz & Floriane, University of Leeds

Preparing for a conference	Leeds university	02.02.2016		Full workup of attending a conference. Starting from choosing the correct conference to planning ahead and booking everything.
Fluids Seminar	Leeds university	04.02.2016		Convection and generation of magnetic fields in anelastic dynamo models, Wieland Dietrich, University of Leeds
Fluids Seminar	Leeds university	11.02.2016		The role of the ocean in a climate hiatus – Sybren Drifhout, University of Southampton
Meeting with Sybren Drifhout	Leeds university	12.02.2016		Discussed: Created presentation for Sybren about Phd project, use of oceanographic models, possible placement
Applied Maths Seminar	Leeds university	22.02.2016		Adaptive numerical methods which work on the sphere - Chris Budd, University of Bath

CSE seminar	Leeds university	11.03.2016		A Newton-Krylov Solution Algorithm for Numerical Models of Parabolic PDEs - Mashael Aljohani, University of Leeds
Creativity@Home - Designing MSc projects	Leeds university	21.03.2016		A session with the premise of creating future team MSc projects.
Fluids Seminar	Leeds university	31.03.2016		A General Nonconservative Action Principle; Basic Formalism and Numerical Applications – David Tsang, University of Maryland
Preparing for your transfer	Leeds university	13.04.2016		A review of the transfer process. We were able to ask about unfamiliar elements, and to roleplay some of the viva.

Applied Maths Seminar	Leeds university	18.04.2016		Three dimensional convections – Cedric Beaume, University of Leeds
Meeting with Firedrake development team	Imperial University	21.04.2016		Discussed: Implementing incompressible systems via Lagrange multipliers, setting up self testing code, designing code such that changes do not involve writing new code, preconditioning mixed systems using Schur compliments.
CSE seminar	Leeds university	22.04.2016		Parallelisation of rational Krylov methods – Stefan Guttel, University of Manchester
Fluids Seminar	Leeds university	28.04.2016		Rogue wave impact on buoys and moving ships – Anna Kalogirou, University of Leeds
CDT poster evening	Leeds university	05.05.2016		Created a poster for the evening. Attempted to balance eye catching and mathematics.

Creativity@Home - MSc project write ups.	Leeds university	09.05.2016		Review of the progress each MSc team has had for writing a paper. Wave tank team has decided not to publish a paper, as the wave tank was itself a derivative of the project.
Applied Maths Seminar	Leeds university	23.05.2016		Synchronization of Cilia – Ray Goldstein, University of Cambridge

Usefulness/Positive or negative feedback incl. fit to your PDP/any other comments
Proper risk assessment and the use of flexible time in planning were in my opinion the most useful parts of this course. When we had to produce a full plan for our remaining 3 years for our Phd, I was able to see the importance in using successive short term goals in planning a project. I was able to make some goals for where I wanted the project to be at by the time of the transfer, and can now compare my expectations to what I've actually achieved as a measurable sense of success. So after a year I have a sense of where the project actually is now. We also note that this type of planning applies to also writing a paper in a group and to planning to attend a conference.
This session was incredible useful, as we were able to go through several examples of good and bad academic writing. Something that I had not given much thought to before in my writing was my choice of wording. Susan was very clear and informative about the use of consistent wording, how to be more concise using your wording. I also try now to consider whom I'm writing for, in my reports as a direct result of this session.
Unfortunately this seminar stood out as something to forget. The speaker was not very descriptive of his aims at the beginning of the talk, so it became very hard to follow his reasoning for using several different modelling techniques. He also had several complicated processes that would have been better served with good animations/illustrations that he could have talked through.
This talk's emphasis on how his meshing had to be carefully considered for his droplet was interesting. As he found it was necessary for stability and not just any kind of convergence criterion.
An important point that was noticed in this meeting, was that this was an elastic -fluid interaction problem submitted to a water waves journal. As the paper omitted details for its elastic modelling but gave a full derivation for its water wave modelling, this felt like the paper was inconsistent. We note that while you want to write your paper with your audience in mind, giving the minimal information about the topic area that your audience doesn't know seems like poor writing. An appendix to the paper with full elastic details would make the paper a lot more readable. We also note that the details of their numerical simulations were similarly confusing, which would make replication hard to achieve.
This talk had a good section for how they derived their novel work from an experiment done in the 1950s, and how they derived smaller simpler problems to show that their derivations was a good approximation to the physical system. Also Phillip had a good way of dealing with a question that went on for a long time, and that felt disruptive for the Q&A session at the end. Since they reached an impasse, agreeing to discuss afterwards was the best way to handle it.

This was another droplet/coating problem, that involved a significant amount of time talking about they meshed the problem in order to resolve all the scales and ensure the scheme is stable. An interesting point in the numerics, was that they chose their time discretisation such that any non-linear products were taken to be explicit in the scheme, and were able to show that this choice lead to an energy dissipative scheme.
This talk was useful because he mentioned how he went around going to France to undertake his large scale rotational experiments. His comparison of his experiments to his numericals was also interesting, as he had to visually achieve this by following fluid parcels. This was made difficult by the experiment recording, which would involve glare from the sun which would obviously changed over a large time scale.
The most important part of this meeting was the team insisting that Onno's entire waves group move to using git, as a way of version control programming. This not only provided us with secure cloud based data backups, but allowed us to exactly pinpoint which changes lead to which bugs. The Firedrake team can also helps us remotely debug, as they can now clone our repositories. The use of git also allows us to easily make codes used for papers citable, which means we have an easy way to prove that our results are repeatable. Mentioning github/bitbucket to future cohorts would be a wise investment in producing better programmers.
This talk had a particular interest to me, as the underlying numerical problems are similar. We both have that the schemes involving a strongly coupled monolithic matrix system that is expensive to solve and requires sophisticated numerical linear algebra. His method to decouple the systems, to make it partially explicit for ease of solution might be a method I might try to replicate in my own study.
The Postgraduate forum provided an opportunity to engage with other researchers in the department. It was outlined the role expected of us in the department and also areas we can become active and gain experience. Particularly our role at the postgraduate symposium and other opportunities to present in a formal context within the university.
While this course would be incredibly important if I want to try and pursue an academic career, I felt like the person carrying out the session did not do it justice. The impact, the central piece of the session, was always vaguely alluded to. We were given some case studies to go through in groups, but we never went through what was the key point of the writing to impress the impact panel. We weren't able to digest and go through what would be good and bad ways of stating impact. We did go through a method that allowed us to creatively think of people that might be affected, but this was followed up with a few other similar methods, without much discussions on the benefits of either. I was honestly frustrated with the course.

This workshop was a lot more useful than I initially thought it would be. The process of amassing as many ideas as you can, then systemically going through whether they would be viable afterwards, is something that was quite novel to me and that I know try and use when I am particularly stuck on a problem.
A good review paper on solitary wave dynamics, which went through successive approximations to make the waves less idealised. Comparisons with experiments were shown. This paper could be useful for deriving initial conditions or analytic test problems to solve in computational wave mechanics.
Personally I was not interested in this course, as I do not currently have aspirations in enterprise. Talking to the entrepreneur guests was interesting however, especially in how they managed the risk of having overheads to cover versus getting exposure to get client contracts. In particular how one started off as a consultant to various firms before moving on to creating a program that would fulfil the same function but he could then sell to the companies he had previously worked with. We were also able to try out a new presentation angle – for investors, which has an analogue in research with grants. Similarly to other sessions, we were taught how to be concise in a way to captivate investors in the project.
At this point my Phd project did not have sufficient depth for a poster in the school of computing. I attempted to then make a poster which would highlight the use of Firedrake and unified form language in describing finite element problems. Unfortunately my poster included too many words, so the focus of the poster was unclear – which was meant to be that UFL leads to code resembling mathematical expressions. Another concern raised to me was that it was unclear how my project was related to the poster as a consequence, this could have been avoided by being more concise earlier on. So then I would have room to mention how I plan to use the software.
Floriance and Tomasz showed us how they were using the wave tank we had designed in the team project, and how they were using it to mimic rogue waves and interactions with a solid beam.

This session tied in really with our publication writing sessions, as we went through similar goals for choosing the right conference. I found it interesting that you would want to check the current attendees as well as the speakers, so as to maximise the amount of networking you would be able to achieve at the conference. There was also the consideration similar to writing for a paper that you want to consider your audience in the abstract you would submit for your presentation or poster. So ideally you're trying to maximise the amount of people you want to meet and the people that would be interested in your project.
Despite not being completely interested in the contents of this talk, it was very engaging. Wieland was able to setup his story of how they were applying successive models to model Saturn, and point out in his graphics which results were important and how they related to what they investigating. For each model, he would also take the time to go through the approximations and how this makes it different to previous ones. This type of slow approach through the modelling process is currently I believe is best for presentations on derivations.
I did not like this talk as I felt it had the balance of graphics and written content wrong. The middle of his talk was a flurry of different graphics to show the climate and how different processes operate on it, but this didn't leave much time for me to take in the graphics and understood what he meant with each. So I quickly fell out of understanding with the talk. It also did not feel like the talk was design with a mathematical audience in mind, with many abbreviations having to be explained as they were not known by the audience.
We discussed Sybren's previous work with wave attractors, and how easy it would be replicate certain studies. Sybren was interested in the project after seeing what we were doing/planning to do. We discussed the possibility of having a placement at Southampton, in order to run oceanographic models and he sent to us afterwards a previous paper on oscillations on the equator that we might be able to aim to investigate. Talking to Sybren after his seminar yesterday helped me make a presentation that was more accessible to people without deep knowledge of my project. We were also able to set up a contact for a placement, and potentially include a new publishable to the project.
This talk was very useful for geophysical numerical simulations, as he mentioned using a Monge-Ampère equation in order to provide a good adaptive regime for h-refinement on a sphere. This was my first exposure to refinement regimes that didn't involve cell splitting. The setup for spherical coordinates allow the method to be optimally setup for large scale ocean dynamics.

This talk had a few problems with it, the speaker had assumed a knowledge of Krylov methods and did not go into much detail. This seemed like a poor move since the methods were the crux of the talk, and were essentially introduced in isolation. The aims were set up poorly, so when test problems were introduced to highlight the scheme's convergence these were confused with the problems being tried to be solved with the scheme. A useful method from the audience that should be repeated is when testing small one dimensional problems, as a setup to larger problems using a huge amount of cells is a sufficient stress test that can emulate what you want to ideally solve. In my project when I was comparing explicit and implicit schemes this method was particularly useful in showing which scheme is faster.
This project contained a lot of useful advice for an academic career, for which creating projects is an important part of the career. First is that you should keep track of all projects or problems that you think of, as this may develop later into a project. When designing a project, timescales should always be a consideration for example what might take a day or a week could take up to a month for a new student to undertake. As we have to consider that the project has to have experimental, theoretical and numerical aspects, making sure that the goals are clear and achievable is an important part of planning the project. I'm hoping to develop an MSc project around shallow granular flow, but was not able to finish my project description in time.
This seminar was easily one of the best I've been to. The talk had a lot of informative graphics for each part of the complicated Hamiltonian structures he wanted to go through, which he would explain very well. The speaker had a good appreciation for using humour to make the talk seem lighter and provide breaks from rigorous derivations. An important part of making his talk accessible were his graphics for explaining the difference between a sympletic integrator and a non-sympletic integrator. After seeing how easily he could convey his point with it, I'm planning to use something similar in my future talks. The examples he used to illustrate his scheme were simple and easily thought of, another idea to emulate when highlighting a scheme to people who may be unfamiliar. Finally, he ended the talk with a link to his github and showing how to use his example codes. This I thought was a great way to build exposure and to build relationships, as well as generate usage for his program.
We learnt that the transfer process is both a review of current progress and ability to complete a thesis within the time allocated. The important part of this was that we have to consider publication for the report, and give examples of which conferences/journals are suitable. This lead me to trying out a mock paper and which parts of my project would be suitable for a numerical analysis journal, and which would be for an oceanographic journal.

Introductory lecture for a new member of staff, so the talk was quite informal with a fair amount of jokes. His explanation of how he parallelised his code was very useful. Setting up such that his code does all the boundary elements first and then does the internal elements for each cell. He also gave a good explanation for how despite this his scheme was ill -conditioned, and how he designed his preconditioner to optimise this problem.
Similar to the last meeting, we also discussed better programming as well as project work. This involved now minimising the amount of code written and replicated. Specific examples included, writing test problems such that it builds the problem on successively refined meshes to show that the scheme does converge as expected. We also used definitions so that if we want to change parameters or which parameters are explicit/implicit it can be done without rewriting any of the main code. The importance of this is that with writing new codes, you will inevitably introduce new bugs/errors that you have to find/solve. By taking longer at the beginning to set up the code correctly, we ensure that we minimise the errors we introduce with our repeatable runs. As we also want our code to be citable, this would also aid other people use our code and understand what's going on.
The main interest for me in this talk, was the methodology in his study of parallelisation. This involved using successively large problem, and then timing each separate step of the parallelisation while comparing the accuracy. An important point that I didn't realise, was that there was a balance between the accuracy and efficiency of a parallel scheme, in a way that you don't appreciate in serial. As I have to eventually use parallel to handle larger problems, this talk was useful in providing a methodology for showing your parallel method is efficient.
Anna was very good in explaining how they successively built models, starting from energy conserving shallow water models, to a linear model of a single wave hitting an ideal boat, to a fully 3d non-linear problem. She kept a strong narrative going through out the seminar, to emphasis the importance of each approximation in the models.
This was a poster evening for six different CDTs, as a result I tried to reduce the amount of mathematics on the poster so that it would be understandable to people with different backgrounds. Some feedback that I had was that aim of the method used wasn't clear. This could have been reduced I believe if I had included some kind side by side example of a dissipative numerical method, so that it would have been obvious to lay people why we would want an energy conserving numerical scheme. My poster was also quite dense with words in comparison to other CDT's posters. I'll have to try and find some more concise ways of writing the description or find some more descriptive graphics.

We reviewed team jetset's paper, as it was the only one that had a paper near completion. However as the paper was nearing its final cycle of review, we had little to add as improvements, as most of our grievances were found to be with the journal's template. For team turbid we discussed the difference between long and short article papers, as they had recently decided to rewrite the paper for a short article paper, around 4 pages, which would be more suitable for them to talk about their experimental results as they felt this was the most novel part of their project.
Interesting application of fluid mechanics to model a biological process. Good use of graphics to help visualise the movement of the cilia and how this can lead to motion for small organisms. I feel like I should keep attending seminars like these, as otherwise I'm not going to get exposure to similar areas where my understanding of fluids can be transferred over.