Data Analytics and Society Programme

University of Manchester Handbook

2022/23

Part 1

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

UNIVERSITY OF LEEDS

UNIVERSITY OF LIVERPOOL

MANCHESTER 1824

The University of Manchester

The University Of Sheffield.

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Introduction

Welcome to Manchester and the CDT in Data Analytics and Society. This is a new endeavour for staff and students alike. We are excited about the possibilities that this new programme presents and we hope that you will also be approaching this new stage in your academic careers with a similar feeling of excitement.

This handbook aims to be a one stop shop for information about the programme but given the complexity of the University and the programme itself it is likely that things are missing. A simple rule here - don't flounder around - if you can't find the information that you want, ask. The contacts list below provides a list of people that will; usually be able to help with most problems as will your supervisors and indeed fellow students.

About the Cathie Marsh Institute (CMI)

The Cathie Marsh Institute (CMI) is the host for the Manchester component of the CDT – although students may well be have supervisors from anywhere in the school or university.

The Institute provides a focal point at The University of Manchester for the application of quantitative methods in interdisciplinary social science research in order to generate a world class research environment.

We apply structures to life's challenging social questions, provide high-quality methods training and development and promote excellence in quantitative social sciences. It combines the strengths of two previous research centres in the Social Sciences at The University of Manchester, the Cathie Marsh Centre for Census and Surveys Research and the Institute for Social Change.

Manchester Contacts

The Postgraduate office is located on the 3rd floor of the Williamson Building (3.05). This is the organisational administrative centre for all degree programmes within the School of Social Science (SOSS). This is the place where you can obtain all relevant programme information. The office is open for student enquiries: Monday – Friday 10.00 – 4.00.

The Graduate Team is responsible for the day to day running of the Graduate Centre and are always on hand to listen, advise and to help. Please ensure that the Graduate Office has your current address, student e-mail address and phone number. If these details change, please let us know as soon as you can so that we are able to get in touch with you should the need arise.

It is important that you read your student email on a daily basis. You will have received information on how to register for an email address and computing facilities during registration week. You are required to register for your email

address and return your address form to the Graduate Centre by no later than the first Friday of semester 1. Please also check the student mail box (located on the 4th floor of the Arthur Lewis Building) and the Graduate Office notice board (next to the Graduate Office 2.003) on a regular basis.

Mark Elliot: Programme Director
Room G27a, Humanities Bridgeford Street building
Tel: 0161 275 4257
Email: mark.elliot@manchester.ac.uk

Elisabeth McCormick: Taught Postgraduate Administrator
Room 3.05 Williamson Building
Email: elisabeth.mccormick@manchester.ac.uk
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Eleri Pound: CDT Centre Manager, University of Leeds
Tel: 0113 343 0882
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Bernadette O'Connor: Humanities PGR Services Manager
9-M.38 Crawford House
Email: bernadette.oconnor@manchester.ac.uk

Michele Beradi: School PGR Director
Tel: 0161 275 2494
Email: sophie.woodward@manchester.ac.uk

Mario Pezzino: Teaching and Learning Director
Tel: 0161 275 1383
Email: Mario.Pezzino@manchester.ac.uk

Myra Knutton: Lead Disability Support Coordinator
Room 3.05 Williamson Building
Tel: 0161 275 7551
Email: myra.knutton@manchester.ac.uk

Jill Chandler: Disability Support
Room 3.05 Williamson Building
Tel: 0161 275 4823
Email: jill.chandler@manchester.ac.uk

Some useful general Links

http://my.manchester.ac.uk

http://www.socialsciences.manchester.ac.uk/student-intranet/postgraduate/postgraduate-taught/

http://www.humanities.manchester.ac.uk/pgr-handbook-soss/

Provisional dates for 2022-23 for year 1 students

Date(s)	What is happening?
26th September 2022	Teaching starts (Manchester)
TBC*	1st Core Module Programming for Social Science (Leeds)
TBC*	Induction and Training Needs meetings
TBC*	Deadline for 1st core module assessed work (1st piece).
TBC*	Deadline for 1st core module assessed work (2nd piece).
16th December 2022	Autumn term ends
23rd Dec 2022 – 3rd Jan 2023	University Closed
19th January 2023	Standard 1st Semester deadline for course work
16th – 27th January 2023	Semester 1 Exam Period
TBC*	2nd Core module: Analysis of Human Dynamics (Liverpool)
30th January 2023	Spring term starts
TBC*	Deadline for submission of internship pro-forma.
TBC	Deadline for 2nd core module assessed work.
TBC*	Internship formative presentation session
31st March 2023	Spring term ends
TBC*	3rd Core Module Understanding Data and its Environment (Manchester)
17th April 2023	Summer term starts
TBC*	3rd Core Module formative presentations
TBC*	Deadline for 3rd core module assessed work
TBC*	4th Core Module Social Analytics & Visualisation (Sheffield)
9th June 2023	Summer term ends
TBC*	Assessed Internship Presentations
TBC*	Deadline for Internship reports.
TBC*	Deadline for 4th core module assessed work
TBC*	Deadline for submission of Annual review materials

*A live version of the handbook is kept in an online Resource Hub that all the students have access to, you can check this for up to date information and key submission dates, which are TBC at the time of writing (https://datacdt.org/)

Term long modules – autumn term

Methodology and Research Design SOST70521

Runs during semester one (lectures 10-12 on Tuesdays and seminars on Fridays)

Qualitative Research Methods SOCY60230

Two Introductory Sessions on Friday 30th September and 7th October. You then take the 10-credit QRM course: Foundational and Advanced Perspectives on Qualitative Research SOCY60231 which is taught over five sessions on the following dates: Fridays, 14th October, 21st October, 28th October, 11th November and 18th November. You can then choose one optional 5 credit module to complete the full 15 QRM credits from a range of modules provided in the School of Social Sciences 'Qualitative and Quantitative Research Methods Training Handbook'. All QRM courses run on Friday.

Key dates for 2022-23 for year 2 students

Date(s)	What is happening?
26th September 2022	Autumn term starts (Manchester)
Friday 16th December	Autumn term ends
23rd Dec 2022 – 3rd Jan 2023	University Closed
19th January 2023	Standard 1st Semester deadline for course work
16th – 27th January 2023	Semester 1 Exam Period
30th January 2023	Spring term starts
TBC*	Research Project module: planning research projects
TBC*	Research Project module: Writing papers
TBC*	Research Project presentations
31st March 2023	Spring term ends
17th April 2023	Summer term starts
25th May 2023	Standard 2nd Semester deadline for course work
9th June	Summer term ends
TBC*	Deadline for research project reports
TBC*	Deadline for submission of Annual review materials
TBC*	Deadline for completion of Annual review paperwork

*A live version of the handbook is kept in an online Resource Hub that all the students have access to, you can check this for up to date information and key submission dates, which are TBC at the time of writing (https://datacdt.org/)

Resources available to you

Your Office Space

All our research students are provided with their own desk in a shared office spaces in the Cathie Marsh Institute. This includes a fully networked PC. To facilitate your research, you have free access to a high-quality network printer, photocopier and scanner.

Funding for fieldwork and conference attendance

This generally comes from the CDT. See appendix B for more information on how you access such funds. Funding may also be available from the various Research Groups that form the Cathie Marsh Institute for social research (CMI). Talk to your supervisor or programme director for more information about seeking funding from the CMI.

Researcher skills training and development

In addition to the training you will receive on the Masters programme you will need to attend other training as part of the whole programme, and as the CDT projects are classed as 'Advanced Quantitative Methods' (AQM) projects, you will need to be able to demonstrate that you have attended advanced training and how these have impacted on your research project development.

Developing personal and professional skills is an important part of the postgraduate research degree. A PhD is no longer purely about getting on with your research and publishing the findings - though these will remain the key focus. A PhD in the UK now also places importance on developing you and your skills - as a researcher and an individual – to become more effective in your research, and to enhance your future employability whether this is inside or outside academia. It can be helpful to divide skills into two categories – "research-specific" and "transferable" skills, although in reality the distinction between these two categories is blurred.

Research-specific skills are, as implied, usually very specific to your research project area, such as subject knowledge, research methodology, experimental techniques and health and safety. This will at least partly be covered by your training as part of the MSc programme, in the core skills and the elective modules you choose to take. You may also choose to sit in on further modules later in the programme if you and your supervisory team feel it is appropriate.

Transferable or generic skills, e.g. writing and presentation skills, project management skills, IT skills etc. all help you to perform your research effectively and efficiently, and also contribute to your future employability. Transferable skills are just as important as research-specific skills, and there has been significant

investment by the UK Research Councils (RCUK) to provide suitable development opportunities for PhD students within the University of Leeds.

Training and Development Needs Analysis This is a process by which an individual can manage their own development through a process of reflection and structured planning on how they can meet their own goals. In order to help you to understand what skills and competencies you could be building. A form is included at the end of this handbook for you to complete, you will also need to include this information for your Home University (please see link below).

http://www.socialsciences.manchester.ac.uk/research/

Training Plan All students must undertake a review of the training they have had to date and any future training needs and this should ideally be done after a training needs analysis. This should be done in the first month of your PhD in consultation with your supervisors and should be discussed at review meetings and formal progress points during the programme.

For more information about national transferable skills for PhD students see the Vitae RCUK Researcher Development Framework:

https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework

Details of different bodies which provide training for PG Researchers are listed below.

Supervision

Arrangements will vary in detail, but the following provides general guidelines:

1. At the start of the programme you and your supervisors will agree a programme of work including training provision. This will be informed by your completion of an on-line Training Needs Analysis (a skills audit), details of which will be provided during induction.

2. You will receive regular supervision meetings. The length and frequency of meetings may vary according to the nature of ongoing work and stage of the PhD but after year 1 we generally expect to hold two-weekly supervisory meetings with written work normally submitted beforehand for discussion.

3. It is important that you keep good records of supervision meetings, including agreed goals and actions ahead of the next meeting. These records will form an integral part of your personal development planning; you should agree with your supervisor how best to record these.

4. Your supervisors are generally your first port of call for all academic related matters. However, all staff (and your research student colleagues) are usually very happy to be consulted where you seek advice in areas relating to their own

expertise and the programme director is available to answer queries about the programme, administrative matters, finance and so forth.

Personal Development Planning

Personal Development Planning (PDP) is an active and continuous process of self-appraisal, review and planning of professional and personal development. In other words, you look at what you can do and what you have done, think about what you need to do and would like to do next, figure out how you will do it and then congratulate yourself for having done it. You then start the process all over again.

PDP is a process not a single document or product. PDP is a collection of active documents that should be revisited regularly to enable you to evaluate your own progress and learning. If approached in a professional manner, your experience of PDP at the University of Manchester should be the beginning of a life-long process of self-reflection and action in which you identify and set goals that make you the control-centre of your own development.

PDP provides the student with the opportunity to – Plan, Reflect, & Record - their progress throughout the period of their research and is premised on the idea that a student is more than their research. The components of PDP result in a portfolio for the student to reflect upon and use as a source of reference. PDP provides the student with the opportunity to set their own development goals. It also provides the student with the opportunity to reflect on their increasing skill set and to comment on the quality of the research experience.

PDP is carried out for Manchester PhD students through the electronic system known as e-prog. Because you will not be registered formally as PhD students until your second year you will not use the system in year 1. Instead there will be several forms to complete which have been customised for use by students on this programme.

Seminars

Attending Seminars

Attending research seminars is important for all graduate students. It serves as a useful way of integrating with colleagues, learning about the research they are doing, as well as playing a crucial training role in providing real-world exemplars of the research process, and exposure to presentation skills. All our Graduate students are expected to attend seminars on the Social Statistics Seminar series which runs through both semesters. The more formal series runs from 4PM every Tuesday in HBS 2.07 and the more informal research in progress series which runs on Tuesday Lunchtime. You are also strongly encouraged to attend other seminars of interest from the wide range of seminar series run across the school and faculty.

Presenting Seminars

As a PhD student, you will be expected to make seminar presentations as part of the lunchtime research-in-progress series. This is an excellent opportunity to share your research progress with colleagues, gain useful feedback and develop your presentation skills. Giving a seminar is also valuable preparation for presenting papers at Conferences, which you will be encouraged to do after your first year.

Taught Modules

Module enrolment

You will need to choose and confirm the modules you wish to take as part of your programme of study. You will need to discuss which modules are appropriate for you to select as part of your initial Training Needs Analysis with your supervisor. The form and guidance for this are included at the back of the handbook.

CMI Short Courses

A list of courses is available here:

http://www.cmist.manchester.ac.uk/study/short/

There are usually 5 places on each course available for free to Manchester students, allocated on a first come, first served basis. These can be a valuable source of research training, so discuss your training needs with your supervisors early in each semester and try to book as early as possible to secure a free place.

Attendance

Attendance at tutorials/seminars is compulsory. Attendance monitoring will take place according to your home institution attendance monitoring policy, or for the core module, according to the policy of the institution hosting the module.

Acceptable reasons for absence include health problems, bereavement, maternity leave, and serious personal difficulties.

Traffic delays, attending family celebrations, paid employment or extra-curricular sports activities are normally regarded as unauthorised absence. However, we do consider each case on an individual basis.

For absences other than illness, you must notify your school's administrative office in advance of the absence, or as soon as is practical afterwards.

If you have problems that may prevent you from attending sessions or continuing as a student at any time, talk to your personal tutor or a member of student support staff who will do their best to help you.

If you are unable to attend due to ill health, you should report this using the appropriate method for your home institution. If you are ill and the absence is for less than five working days there is no need to provide medical evidence. However if you are ill for more than five working days, **a doctor's medical certificate** should be provided to your local postgraduate administrator.

Please report to elisabeth.mccormick@manchester.ac.uk for taught modules or jackie.boardman@manchester.ac.uk for research activities.

Remember: it is your responsibility to catch up with missed work, lectures and other academic commitments, please also speak to your supervisors if you are concerned that illness is disrupting the progress of your research.

If you are ill just before or during examinations you should seek written medical confirmation from your GP. Arrangements can be made for students who are ill to take exams in the sick bay and these special circumstances will then be taken into account. In addition, if you have been ill during the year and think that this has adversely affected your studies, or led to an underperformance in your assessed work/exams, you should provide written supportive evidence for the Exam Board. Please speak to your local postgraduate administrator or refer to local guidance for the correct procedure for your Home University.

Assessment of taught modules

To see how your modules are assessed and to find out the marking criteria, please refer to the individual module details.

Students are responsible for knowing and understanding the examination/assessment regulations for the modules chosen. Details of the CDAS 'core' modules are included over the following pages, but please ensure you check the requirements for each module assessment at the beginning of each module.

Graded and Formative Assessments

You will be both assessed formally and formatively. The formal assessments will ultimately become part of your grade for the course. While the formative assessments are designed to give you feedback and a sense of where you stand in terms of knowledge, however they do not affect your grade. You still expected to complete formative assignments and to make a good faith effort.

Teaching Opportunities

We encourage research students to take advantages of the opportunities for paid teaching work available within Social Statistics and elsewhere in the univeristy **in years three and four of your programme**. Apart from providing useful additional income, gaining teaching experience will considerably enhance your CV, as well as improving your presentation skills. When taking on teaching be realistic,

don't take on more than you can handle. **We do specifically advise against taking on teaching during years one and two of the programme.** There are no rules against this but previous students who have done this have found the additional workload - on top of the programme expectations - stressful. Talk to your supervisors or your programme director if you have any questions about this.

For more information on Teaching Assistant (TA) roles, training, etc., visit:

http://www.humanities.manchester.ac.uk/humnet/our-services/teaching-and-learning/tahub/

Here is some information on how you can apply to be a teaching assistant:

http://www.socialsciences.manchester.ac.uk/about/people/teaching-assistants

Teaching Assistance on the SRMS Masters programme

Social Statistics has a Master's degree program called Social Research Methods and Statistics. There are opportunities for research students to take up positions as graduate teaching assistants on this program. This will involve classroom assistance as with the external courses, but you may also get involved in marking of formative assessments and other activities associated with an accredited programme.

Teaching Assistance in CMIST Short Courses

Throughout the year there will also be various emails from staff looking for TA for CMIST short courses, which are one off workshops, looking for TAs to assist with helping participants' most often with software, such as R, STATA, etc.

Teaching Assistance in SOSS

It is possible to get involved in teaching assistance work elsewhere in the school. This will typically be by providing teaching assistance on an undergraduate course.

Teaching Assistance Training

If you have an interest in teaching you should take the University course on Tutoring. The training runs every September. Apart from providing a useful accreditation for your CV, attending this course is a formal requirement for any research students taking on a teaching assistance role at the University.

If you are interested in teaching, talk to your supervisor and let your interest be known to the PGR director. They will talk through the possibilities and let you know what you need to, and when, depending on your area of interest.

There is a limit on the hours you can spend on non-PhD related work. More information can be found here:

http://www.humanities.manchester.ac.uk/humnet/our-services/teaching-and-learning/tahub/

Ethics

This process requires you and your supervisor to confirm that you have agreed on an appropriate title for your project and that you have considered any potential ethical considerations and risks.

All students and their supervisors **must** complete this process, to determine:

- Your research does not involve work with human participants: therefore no ethical clearance is required and you can go ahead and start your research project.
- Your research does involve work with human participants: therefore ethical clearance is required before you can go ahead and start your research project.

Procedure for confirming and Pre-screening your research for ethical issues and risk.

Please follow the instructions on the School of Social Sciences intranet at https://www.socialsciences.manchester.ac.uk/student-intranet/postgraduate/postgraduate-taught/health-safety-ethical-approval/

or

https://www.humanities.manchester.ac.uk/pgr-handbook-soss/policies/research-ethics/

You and your supervisor should **complete this online form by no later than 1st May 2023**

The above date is final. You can complete the online form anytime from 1st April with the approval of your supervisor. You may be refused submission of your dissertation if the process hasn't been completed.

Research Ethics

All research raises ethical issues of some kind including research that is solely based on the analysis of secondary data. Reviewing the ethical issues raised by your research is an important stage in the research process and can often provide some useful feedback on the research design. Where conducting fieldwork this needs to include a risk assessment and fieldwork safety training. See https://www.the-sra.org.uk/

You will need to complete an ethical approval form as a minimum for MARD.

The Review Process

All research students are subject to a formal process of monitoring and review as follows:

Mid-Year review

Mid-year reviews happen in between January and March.

These are less formal than the Annual review, though the precise details vary from student to student. As a minimum the rules require completion of a report form (comprising separate sections for student and supervisor(s)) outlining progress over previous work period, highlighting problems, and stating objectives for the next 6 months. The form is signed by student and supervisor(s) and sent to the school office.

For CDT students there will be no mid-year review in year 1.

Annual review of progress

The general process is that at a date agreed with the main supervisor, the student submits appropriate written work to an expert from outside of the supervision team who will act as a reviewer. This is circulated, together with the completed annual report form.

The submitted work should be one or two substantial pieces of written work. For first year students, it will be in the form of a research plan. For subsequent years draft chapters or papers from the thesis are normal.

The reviewer reviews the written work and makes a recommendation to the Programme director about whether the students should be allowed to progress to the next year of study. The reviewer also provides feedback on the written work.

The review committee usually comprises: The Supervisors (possibly including the non-academic partner) and at least one other academic independent of the supervisory team.

In year 1, the process is lighter with the intent mostly formative. The programme director (or delegate if the programme director is a supervisor) will be in the role of the independent academic.

Progression requirements

Year 1

Students will register as a Postgraduate Research Student and will follow required training and specialised subject modules as well as research study. You will be required to register for 120 credits in year 1 as follows:

- Core research skills module(s) (30 credits)
- Domain Skills modules:
    - Programming for Social Sciences (15 credits)
    - Understanding Data and its Environment (15 credits)

    - Analysis of Human Dynamics (15 credits)
    - Social Analytics & Visualisation (15 credits)
- Internship (15 credits)
- Elective module (15 credits)

You will need to complete a Training Needs Analysis at your first meeting with your supervisor to produce an evaluation of outcomes and gaps. This will form the basis for an annual Training Plan.

You should have a minimum of 5 formal supervision meetings and will need to submit a research proposal for your first year of research activity in September.

Students who have met the required standard of academic progression through module assessments and progress with research (assessed at the annual review in September) will be permitted to proceed to registration for year 2.

Year 2

You will be required to register for 60 credits as follows:

- Research Project Report (30 credits)
- Elective modules (30 credits)

You should also continue to attend any additional appropriate training according to your Training Plan and have monthly supervision meetings. In September, you will have a formal progress review. You complete your review form on e-prog and submit the following pieces of work:

a. Your research project report; possibly revised after feedback from the markers.
b. Another piece of writing (possibly in the form of a literature review).
c. Either an update of the year one research proposal or a new two page outline proposal.
d. A draft thesis outline.
e. A work plan for year 3.

Your work will be reviewed by an independent reviewer. If you have met the required standard of academic progression through module assessments and progress with research you will be permitted to proceed to registration for year 3.

Year 3

You should have no further assessed modules to take in years 3 and 4, however you should still attend training according to your Training Plan and you should have fortnightly supervision meetings and complete formal progress reports.

Your work will be reviewed by an independent reviewer. If you have met the required standard of academic progression through progress with research you will be permitted to proceed to registration for year 4.

Year 4

You should aim to submit your thesis at the end of Year 4. Please note that you will need to submit an 'intention to submit' form 2-3 months prior to submitting.

Please refer to local guidance for thesis submission guidance:

https://www.humanities.manchester.ac.uk/pgr-handbook-soss/programme/thesis-submission/

Postgraduate Research Council (PGRC)

You are encouraged to form a PGRC to discuss matters concerning the CDT cohort, administration of the programme, supervision monitoring, module content and teaching etc.

The committee is invited to bring reports to the Management group twice a year with representatives from the PGRC invited to attend. If you would like to run as a representative to your cohort, please let Hayley Irving, H.Irving@leeds.ac.uk, know.

Requirements for Tier 4 International Students

As your Tier 4 sponsor, the University of Manchester must monitor your attendance and be assured that you are fully engaged with your course of study or research.

To do this:

- We need to ensure that we have up-to-date contact details for you.
- If you leave Manchester for any reason during your studies you need to let your Postgraduate Administrator know this.
- You must attend the census points in addition to complying with the attendance requirement of your programme of study.
- Note: **Attendance at lectures and seminars is mandatory** and this is recorded on campus solutions.

Your responsibilities as a tier 4 student are available here: https://www.studentsupport.manchester.ac.uk/immigration-and-visas/

When are the census points?

The Census Dates for 2022/23 for all Tier 4 students are TBC.

Please note:

- Please ensure you check your email regularly for any updates or information regarding the Tier 4 census.
- You must make sure that your home country address, your Manchester address, your mobile telephone number and email details are always accurate. You should also update the UKVI with your new contact details
- If you are going to be away from Manchester during any period of your registration you must let your Programme Administrator know this (by email or in person).
- It is your responsibility to ensure you are complying with the rules and regulations of the Tier 4 visa. Failure to do so could result in the university cancelling their sponsorship of your visa.

Further information

For more information on Tier 4 visas:
www.ukba.homeoffice.gov.uk/visas-immigration/studying/adult-students/
If you have any concerns, please contact visa@manchester.ac.uk

What to do if there is a problem

Especially to those new to research, doing a PhD is a very different challenge to all preceding study you may have done. While the overall experience will hopefully prove highly rewarding, there will certainly be times when you are not making the progress you would wish, for a range of reasons that may be academic related or otherwise.

The research process is rarely smooth and short-term difficulties and lack of apparent progress is to be expected. But you are strongly advised not to ignore problems, but instead to make full use of the support available. Problems can often be sorted out informally through working with colleagues and your supervisor or the programme director.

The Director of Postgraduate Research within the school is also available to discuss problems in a more formal capacity. You should make yourself aware of the many specialist support services (including health and counselling services) available to all students at the University of Manchester through the Student Services Centre.

Appendix A
PROGRAMME SPECIFICATION

Rationale for the Degree Programme

New forms of data are increasingly pervasive, generated through use of new technologies such as smart card enabled transit or by ambient mechanisms that continuously stream data through sensor networks, generating a variety of new attributes about our city environments. Such data impact and document our lives as customers, as workers and as travellers, in the home and in our private and public relationships, in our physical health and well-being. Unlike many traditional data, they are often of higher spatio-temporal granularity and change with high frequency and increasingly in real time, but come with particular methodological challenges to account for higher degrees of uncertainty, and bias. They also highlight particular ethical questions of data privacy, the transparency of the algorithms and platforms used to collect the data, and the deviation from original intended use.

This integrated MSc and PhD programme builds on the strengths of four partner institutions with a strong commitment to data science and capabilities that reinforce and complement one another. This programme exploits substantial existing commitments to data analytics, including the Institute for Data Science (Manchester), Leeds Institute for Data Analytics, Sheffield Methods Institute and Geographic Data Sciences Lab (Liverpool). Each of these research hubs connect with relevant expertise in Centres and Departments across their respective institutions and beyond. Additionally our city regions represent four of the UK top ten urban cores (https://citymonitor.ai/environment/where-are-largest-cities-britain-1404). We include letters of support to demonstrate engagement with both public service institutions and commercial organisations within each area.

This Centre leverages the considerable cumulative experience of two existing ESRC Doctoral Training Centres (North-West and White Rose). This allows us to draw on established and highly regarded programmes of core research methods training, and work within established management structures in each partnership, seeking guidance and feedback where necessary. We will exploit an existing track record of collaborative working between the Universities, together with new mechanisms and structures, to provide our doctoral training cohorts with an integrated and coherent development programme.

Programme Overview

<table>
<tr><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th></tr>
<tr><td colspan="4">Training</td></tr>
<tr><td colspan="2">MSc Programme
Year 1: 120 credits:
Research training modules
September - Programming for Social Sciences (Leeds)
January – Understanding Data and its Environment (Manchester)
April - Analysis of Human Dynamics (Liverpool)
July - Social Analytics & Visualisation (Sheffield)
Semester 1: elective module (possible)
Semester 2: internship module, elective module (possible)

Year 2: 60 credits:
Semester 1: 1-2 elective modules (possible)
Semester 2: research project module, 1-2 elective modules (possible)</td><td colspan="2">Advanced Skills training and personal development as appropriate</td></tr>
<tr><td colspan="4">Research</td></tr>
<tr><td colspan="4">Progression Norms</td></tr>
<tr><td>Research proposal/ Internship report</td><td>Research report + 1 other significant piece of writing</td><td>Two significant pieces of writing</td><td>Completed research papers and Draft thesis</td></tr>
<tr><td colspan="4">Progression Process</td></tr>
<tr><td>As at mid year 1 of standard route PhD</td><td>As end of year 1 of standard route PhD</td><td>As end of year 2 of standard route PhD</td><td>As end of year 3 of standard route PhD
Submit Thesis and Viva</td></tr>
<tr><td></td><td>Bank Award of MSc Degree</td><td></td><td>Award: PhD in Data Analytics and Society with integrated MSc</td></tr>
</table>

Aims of the taught component of the Programme

The programme aims to:

1) Prepare students for doctoral study and professional research roles by offering a course which meets the requirements of world class academic institutions.
2) Provide students with the skills they need to undertake data analytics in a social science context.
3) Engender in students an awareness of both the possibilities and limitations of a range of methodological approaches and techniques used across the social sciences in identifying and researching real world problems.
4) use teaching informed by research to provide a stimulating culture of learning, the development of high-level research skills, and enthusiasm for applying these within subject-specific and interdisciplinary contexts.
5) Support students in developing critical thinking, intellectual curiosity, and independent judgement. To educate able and well-motivated students from a wide variety of backgrounds.

Intended Learning Outcomes of the taught element of the Programme

A. Knowledge & Understanding

Students should be able to:

A1. Identify, summarise and critically compare key theories, concepts and empirical research evidence within the fields of data analytics and social science. (PG Dip and MSC only)

A2. Appraise the relative strengths and weaknesses of different methodologies in analysing different types of social and cultural data, and apply knowledge in managing the implications of applied research. (MSc only)

A3. Access and work with data in an ethical way mindful of the legal complexities and restrictions associated with sensitive data. (All)

B. Intellectual Skills

B1. Develop a good understanding of contemporary topics in social science and data analytics and how the global landscape shapes the analysis of large datasets, and non-standard forms of data structure, such as those where it is

the links between observations, rather than the observations themselves. (PG Dip and MSC only)

B2. Apply data management, high-level programming and analytical tools and techniques to analyse data describing social and cultural environments, and set appropriate objectives and strategies in complex situations. (All)

C. Practical Skills

C1. Demonstrate in-depth, specialist knowledge and mastery of techniques relevant to the disciplines of data analytics and social science; including an ability to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the disciplines. (All)

C2. Apply ethical codes to the practice of data analytics in the context of social and cultural sciences. (All)

C3. Demonstrate advanced independent research skills and analytical abilities in the fields of data analytics and social science, along with the ability to develop research ideas and questions and to undertake analysis of data and written presentation of results for practice. (MSC Only)

D. Transferable Skills and Personal Qualities

D1. Develop transferable professional skills in working with others required for using social science data to form and implement analysis strategies, such as thought leadership. (All)

D2. Develop and deliver professional quality oral presentations that distil insights from analyses of data from social and cultural perspectives to describe, interpret, and explain the social world. (PG Dip and MSC only)

D3. Take a proactive and self-reflective role in working and to develop professional relationships with others. (All)

Learning & Teaching Processes (to allow students to achieve intended learning outcomes)

Lectures will largely be used for imparting essential knowledge and are an important means of engaging students with an understanding of substantive issues around the research process, methodological approaches, and subject-specific debates.

Computer workshops are an absolutely essential part of the MSc programme. Skill development will largely be assisted through lab-based activities. Labs will enable students to learn and put into practice a wide range of quantitative and qualitative research techniques of data collection and analysis. There is a strong emphasis in the programme on the development of critical thinking about the research process but, in addition, we also expect all students to emerge from

the programme with advanced data analysis skills that are developed in the context of a variety of different software tools. Computer lab exercises will also help develop critical thinking and a reflective, ethical approach to research, with applications to core social science issues to enhance disciplinary knowledge and data visualisation skills.
Independent study provides students with the opportunity to develop important knowledge and skills at the postgraduate level. Students will need to spend a significant amount of time working on their own (with learning material provided by tutors). Within core modules there is considerable flexibility for students to identify topics that particularly interest them and then to take these forward in study for the Research Project and/or in choosing assessment topics for core and option modules.

Individual tutorials will be used to embed critical self-reflection (in the form of the Training Needs Analysis) from the outset, and will be the main mechanism of supervision and support for the dissertation.

Assessment (of intended learning outcomes)

Essays are used as an assessment method where there is a need to evaluate comprehension of particular concepts, theoretical perspectives, or methodological and epistemological debates (A1, A2, A3, B1).

Project reports test students' knowledge and understanding and demonstrate their skills across more applied elements of the programme. (B2, C1 and C2) They play an important role in demonstrating understanding of the practical utility of research methods.

Oral presentation is part of the formative assessment within the programme since it tests students' ability to communicate their thinking, its implications and limitations (D2).

Internship The internship will require substantial interaction with the non-academic organisation, often leading an extended placement at the host's place of business. It will therefore aid in the development of transferable and professional skills (D1, D2 and D3).

Research Project This will be an important piece of work but less heavily weighted than the traditional dissertation. It will involve the articulation of research objectives, an outline literature review and indicative methodology. This will provide a valuable stepping stone towards the main thesis project, and a good applied test of professional skills. (All but particularly C2,C3)

The Structure of the Taught Element of the Programme

The programme structure is divided into five elements, with Domain skills being shared equally amongst the partners. New modules are in italics, all other modules exist and are being delivered to other programmes.

The bulk of the work will be completed in year one of a four year programme and will be completed in year two and will be complemented with preliminary PhD work and partner engagement, which in an integral part of the PhD

Year 1 – 120 Credits

- Domain Skills for Data Science (60) –
  - delivered: September, Christmas, Easter, Summer
- Internship (15)
- Core Research Training (30)
- Advanced skills (15)

Year 2 – 60 Credits

- Research project (30)
- Advanced skills options (30)

Core research training (Credits: 30)

- SOCY60231 Qualitative Research Methods (10 credits)
- Qualitative Research Methods elective (5 credits)
- SOST70521 Methodology and Research Design (15 credits)

Domain skills for Data Science (Credits: 60)

- MANC Understanding Data and its Environment (15 Credits; Manchester)
- LIV Analysis of Human Dynamics (15 Credits; Liverpool)
- SHEF Social Analytics and Visualisation 1 (15 Credits; Sheffield)
- LEEDS Programming for Social Sciences (15 Credits; Leeds)

Data Analytics and Society Internship (Credits: 15)

Data Analytics and Society Research Project (Credits: 30)

Advanced skills (Credits: 45)

Elective modules (Students may substitute additional electives for core training depending on prior learning and qualifications). Selection of these will decided through training needs analysis. Possible module choices are from:

- DATA70141 Understanding Databases

- DATA70132 Statistics & Machine Learning 2: AI, Complex Data, Computationally Intensive Statistics
- SOST70022 Longitudinal Data Analysis (15 credits)
- SOST70032 Complex Survey Design and Analysis (15 credits)
- COMP61011 Foundations of Machine Learning (15 credits)
- COMP60411 Modelling Data on the Web(15 credits)
- COMP60711 Data Engineering (15 credits)
- BMAN70142 - Simulation & Risk Analysis (15 credits)
- BMAN60092 - Risk Performance and Decision Analysis
- BMAN60111 - Information Systems Strategy and Enterprise
- BMAN73271 - Decision Behaviour, Analysis and Support

Student Induction, Support and Development

Induction week

Apart from formal registration, induction week includes an introductory meeting with the programme director and teaching staff, and a welcome lunch. Students receive programme handbooks. They also attend an introduction to the School of Social Sciences, and several additional events at School, Faculty and University level. These include a tour of the library facilities and an IT training. Students are shown on-line registration to the computer network and given instruction in use of e-mail etc.

Student representation

Students nominate a representative to formally raise any issues and concerns on behalf of the group at relevant committee meetings (two formal programme meetings are held each year) and at school level. They may also present views and issues directly to the programme director at any point during the academic year.

Evaluation Questionnaires

At the end of each module, and at the end of the programme, students are asked to complete a short, anonymous evaluation questionnaire. The results are used to evaluate the organisation and content of the individual courses and overall programme.

Student Support

Programme Director: The programme director is available for academic guidance or to discuss issues of a personal nature that may have an impact on a student's ability to study and/or meet course requirements. The programme director is

available to meet students during dedicated office hours or at other times by appointment. General queries regarding the course should be directed to the programme administrator.

Supervisor: Each student is assigned a supervisor of staff who takes some role in providing pastoral care, answering queries and referring students to other University services.

Training needs Analysis (TNA): All students taking the Data Analytics and Society programme are encouraged to engage in an on-going process of personal development planning. The primary objective for TNA is to help students improve capacity to understand what and how they are learning, and to review, plan and take responsibility for their own learning. To assist in the TNA process all students will be invited to meet their Supervisor and/or the Programme Director at the start of the programme, and at the end of the First Semester to review progress and options. Subsequently the TNA will be captured by the normal e-prog based review process.

Office Hours: All teaching staff have office hours during approximately the weeks in which they are teaching to enable students to get extra guidance. On some courses we additionally use Graduate Teaching Assistants (GTAs) to provide additional student support.

Research Project arrangements

Students who successfully complete the taught part of the course may proceed to the research project, which is carried out during year 2 under the supervision of their supervisor. Project reports (of a maximum of 8,000 words) are based on an original piece of independent research. Students are encouraged to think about their dissertation topics early and staff will be happy to discuss ideas. They are required to provide a one page outline of your proposal to the Programme Director early in year 2.

By the end of semester 1 year 2, students will be asked to confirm with their supervisor the title of their proposed project. They then complete a Project Title and Ethical Declaration form, which will be sent via the Programme Administrator.

A project presentations workshop will be arranged during the second semester year 2, where students present their project ideas to fellow students and academic staff and receive feedback on those ideas.

There will also be a session on producing publishable output.

The reuse of assessed work from taught units within the PhD thesis

In this programme, you will undertake taught units at an MSc level of study as part of your PhD but you do not obtain a separate MSc. Consequently, the declaration that you are required to make at the beginning of your PhD thesis (see the University's presentation of the thesis policy: https://documents.manchester.ac.uk/display.aspx?DocID=7420). Clause 6.1 g does not proscribe the reuse material from taught work submitted as part of your PhD programme within the PhD thesis itself.

Consequently, you will have more latitude than usual to reuse such material. This could happen in two ways:

1) Ad hoc Reuse of material. This would typically happen in one of three ways:

   a. that you refer to some of the same literature in the literature review of research project module in the lit review chapter(s) of the thesis.

   b. Some of the methodology that you develop in the research project (and possibly the Methodology and research design) is reused.

   c. you want in the thesis to describe or refer to the relationship with your project partner and that may naturally lead you to reuse material from your internship report.

2) Use of a revised version of the research project report as one of the papers in the thesis.

There are two significant caveats to this:

a. The expectations for the standard of work required for a PhD thesis are higher than the expectations for MSc work. The PhD regulations state that PhD work should be publishable. This issue is particularly relevant to point 1-b above. You would expect to work further on and improve the research project report with feedback from markers, the end of year review, your supervisory team and possibly journal reviewers. This may lead to you carrying out additional analyses and the work will certainly require redrafting.
b. The rules about self-plagiarism still apply. Please refer to the University's Academic Malpractice Procedure (http://documents.manchester.ac.uk/display.aspx?DocID=639).

The key to navigating this is transparency; you should not re-use your submitted work without appropriate acknowledgment. This might mean citing and referencing in the normal way or - in the situation where you choose to reuse the research project report as one of the PhD papers - you should acknowledge that in the (required) section of your introduction where you describe authorship

of (and contributions to) the papers. Something like: "an early version of paper 1 was submitted as my research project report during year 2 of my PhD programme" would be appropriate.

If you are in any doubt about this, discuss with your supervisory team or the programme director.

Module Descriptions

Programming for Social Science module

Module summary	This module provides foundation level skills in computer programming for social scientists. It introduces programming, along with associated introductory techniques for data analysis, visualisation, and modelling. The module will also introduce ancillary themes around good research programming practice, such as version control and licensing.
Module objectives	• To develop core computer programming skills in students. • To develop and awareness of the issues around computer programming. • To develop an understanding of good research programming practice.
Learning outcomes	• Foundation level computer programming for social scientists. • How to build computer analysis and modelling tools. • Practical skills in good research programming.
Outline syllabus	1. Introduction to computer programming. 2. Variables and Objects. 3. Flow control and procedures. 4. Classes and inheritance. 5. Dealing with data, online and off. 6. Basic data analysis and modelling.
Subject specific skills	• Abstraction and synthesis of information from a variety of sources. • Solving problems and making reasoned decisions. • Plan, design, execute and report research. • Undertake effective analysis work. • Employ a variety of technical methods for the analysis and presentation of spatial and environmental information. • Apply numerical and computational skills to data. • Use information technology effectively. • Industry knowledge.
Details of private study and independent learning	Students will be given structured online learning materials that supplement the course in a variety of areas of interest to their research. As part of their project for the module, they will be expected to work through at least one set of materials.
Rationale for teaching and learning methods and relationship to learning outcomes	The course is an intensive introduction to computer programming, completed in five days. The first two days will introduce the core ideas of programming, followed by a day looking at core programming themes, and then two days examining particular methodologies. This will be followed by a period of independent working and project formulation.

Monitoring of student progress	The practical components will build up software which will be assessed in portfolio form. The projects will be set during the week long teaching period, and then three weeks later will be formatively assessed for progress during a half-day workshop. The final project will be due in some five weeks after this.
Rationale for assessment and relationship of assessment methods to learning outcomes	The major assessment will be a single project, designed following the constructionist principle common in computing, that is, with the student. Given the intensive nature of the course, only a single project is appropriate, but formative feedback on progress will be given during the project period to ensure feedback is available for students to act on. The project will be expected to show core programming skills, but will also be embedded in a framework of good research practice, for example, matching research community standards on documentation, licensing, and distribution. The minor assessment will be practical work built up during the course, assessed as a portfolio of work.

Analysis of Human Dynamics module

Module summary	The two enduring characteristics of many new forms of data concerned with human dynamics are time and location; however, these attributes require special treatment by the social sciences. The content of this module reflects various spatial turns within the social sciences and concerns how techniques of modern spatio-temporal data analytics can be integrated with Data Science tools to solve practical real-world problems.
Module objectives	This module seeks to provide students with a robust grounding in those methods enabling the study of human dynamics, providing particular focus on programmatic implementations. The content of this module will enable students to develop a deeper understanding of how new forms of big data with spatio-temporal attributes can be synthesised into useful information when making decisions.
Learning outcomes	• Demonstrate advanced analysis of human dynamics concepts and be able to use tools programmatically to import, manipulate and analyse data in different formats. • Understand the motivation and inner workings of the main methodological approaches of human dynamics, both analytical and visual. • Critically evaluate the suitability of a specific technique, what it can offer and how it can help answer questions of interest. • Apply a number of analysis techniques and how to interpret the results, in the process of turning data into information. • When faced with a new data-set, work independently using tools programmatically.
Outline syllabus	Concepts and methods for the study of human dynamics This first component introduces the student to the general concepts that are relevant to the study of human dynamics, with a practical lab associated with the computational environment and programming software utilized in the rest of the module. Visualization and Choropleth mapping This part of the course will cover the basic principles in geographic data processing and visualization design, including choropleth mapping. A practical lab will develop computational skills related to map creation from data using programming scripts.

	Exploratory Spatial Data Analysis After initial basic visualization, the next step in the process of geodata analysis involves exploring the existence of patterns and associations over space and time. Students will develop knowledge in the main statistical tools to study such distributions as well as how these concepts are encapsulated by state-of-the-art software programming packages. Making decisions When attempting to make optimized choices from a given set of options, problems are often multi-dimensional, dynamic and spatially varying. Through a practical class students will develop methodological skills that reduce such complexity, highlighting salient patterns within data.
Details of private study and independent learning	Students will be set computer based tasks in practicals that will take longer than the timetabled practicals to complete. They will have to access on-line resources to which they will be directed for support.
Rationale for teaching and learning methods and relationship to learning outcomes	These supported day long practical sessions will introduce concepts and ideas and then support students in applying them By working through a series of sequential practicals they will understand the motivation and inner workings of the main methodological approaches and develop skills in the critical evaluation of the suitability of different analytical techniques. The combined sessions will also support students in applying a number of spatial analysis techniques and interpreting the results.
Monitoring of student progress	The practical components will build up skills which and students will be given the opportunity to test their learning in class. The projects will be set during the week long teaching period, and then will be formatively assessed for progress during a half-day workshop 2 or 3 weeks later.
Rationale for assessment and relationship of assessment methods to learning outcomes	The 5000 word project report will allow students to demonstrate the following module LOs: the application of advanced GIS/GDS concepts to analyse spatial data; to critically evaluate and apply suitable techniques in spatial data analysis and to work independently using GIS/GDS tools programmatically.

Understanding Data and their Environment module

Module summary	This module is a combination of technical and non-technical topics all related to critical externalities to the data analytics process. The primary aim of the module is to demonstrate that data science cannot be carried out in a vacuum that a whole range of extrinsic considerations affect our ability to carry out the research that we wish to carry out. However appropriate management of these externalities can lead to higher quality as well more responsible research.
Module objectives	• To develop basic understanding of the technical processes of anonymisation, disclosure control and data linkage. • To develop an awareness of the issues around the use of data in research. • To develop fundamental skills in data husbandry.
Learning outcomes	• Understand the ethical issues surrounding the use of data in research. • Understand the concepts and technical vocabulary of anonymisation and statistical disclosure. • Be able to make informed decisions about linkage/integration of data and carry out a basic data linkage. • Be able to go through a basic anonymisation process with a dataset. • Be able to identify an appropriate collection of data sources for a project and to identify the issues in using those data sources.
Outline syllabus	Ethics and the law: data protection, anonymisation, statistical disclosure, understanding consent. Information about Data: Metadata and Paradata. Provenance and data generating processes. Issues about data quality and the impact on inference. Accessing and finding data. Pre-Processing: Understanding data quality and divergence and the impact on inference; Cleaning data; Editing and imputation models. Combining and enhancing data: Basics of data linkage/integration, synthetic data production.

Details of private study and independent learning	Students will be given structured online learning materials that supplement the course. They will also be provided with a set of readings covering the four main components of the syllabus, which will also provide background for the assessed work.
Rationale for teaching and learning methods and relationship to learning outcomes	Lectures will introduce specific ideas in relation to data management, the ethics and disclosure of data in relation to research The practicals and the clinics will allow the students to apply those ideas and to manage data and be able to make informed decisions about linkage/integration of data and to apply anonymisation processes to data.
Monitoring of student progress	Student progress will be monitored through the staff engagement with practical work. Highly interactive seminars and online clinics will allow students to bring questions and practical issues for discussion and feedback.
Rationale for assessment and relationship of assessment methods to learning outcomes	The learning outcomes of the course are dividing into comprehension/understanding and skills. The comprehension and knowledge skills will be tested through a short critical review of a key area. The skills will demonstrated though a project report.

Social Analytics and Visualisation module

Module summary	This module will introduce machine learning, cluster analysis, social network analysis, textual analysis and data visualisation. The course will emphasise methods that can be applied to real-world applications. Employable skills include techniques for analysing large complex datasets in non-standard ways. A programme of lectures, guided practical classes and independent study will help develop a set of hands-on practical skills useful for social science applications. Students will undertake a small secondary data analysis project for assessment.
Module objectives	This unit aims to: • introduce students to methods for data analytics and data visualisation and help them learn how these techniques can be employed in social science research; • enable students to critically assess the validity, strengths and limitations of different data analytical and visualisation methods; • give students knowledge of specific techniques employed in social analytics; • teach students how to apply techniques for data analytics and visualisation using the statistical programming software R and other appropriate packages; • develop good report writing and critical analytical skills.
Learning outcomes	By the end of the unit, a student will be able to: • be familiar with advanced methods of social analytics including machine learning, cluster analysis, social network analysis, sentiment analysis and data visualisation, and have a critical/reflective understand of how these can be used in social research; • be able to undertake secondary data analysis to answer research questions and have a broad knowledge of the fundamentals of designing a social science research project that involves data analytics and visualisation; • be familiar with how to undertake appropriate analysis using relevant software packages; • demonstrate good analytical and report writing skills.
Outline syllabus	TBC

Details of private study and independent learning	Students will be given structured learning materials that supplement the course in a variety of areas of interest to their research.
Rationale for teaching and learning methods and relationship to learning outcomes	The 10 integrated lecture / practical sessions will introduce and then apply ideas on social data analytics. Through supported introductory talks, students will become familiar with advanced methods in social analytics and will develop a critical/reflective understand of how these can be used in social research. The practicals will develop understanding of and capability in secondary data analysis to answer research questions how to design a social science research project that involves data analytics and visualisation. Together these will support student learning of how to undertake appropriate analysis.
Monitoring of student progress	The practical components will build up skills which and students will be given the opportunity to test their learning in class. The projects will be set during the week long teaching period, and then will be formatively assessed for progress during a half-day workshop 2 or 3 weeks later. The final project will be due in some five weeks after this.
Rationale for assessment and relationship of assessment methods to learning outcomes	A small scale comparative quantitative research project must be designed by the student using available secondary data and incorporating multivariate techniques taught in the course. The student must write a report of 4000 words. This report will be used to assess critical thinking, the ability to undertake some secondary data analysis, use of appropriate software, and analytic and report writing skills. The project has to be approved by the convenor of the module in advance. All learning outcomes will be assessed.

Internship Project module

Module summary	In this module students will work with one of the non-academic partners, which may be their long - term PhD sponsor but not necessarily so. It will involve a piece of data analysis which has been agreed with the non-academic partner. The internship will require substantial interaction with the non-academic organisation, often involving an extended placement at the host's place of business. It will therefore aid in the development of transferable and professional skills, as well as establishing mastery of applied data analytics techniques and problem-solving ability.
Module objectives	This module will engage students with one or more non-academic partners, and will benefit them through real- world support including provision of data, advice. This model of co-production will have significant benefit in terms of knowledge transfer, specifically around the complexities of those new forms of data that students will likely encounter. This experience will also act as a trigger for development of professional skills through engagement with non-peer or academic colleagues.
Learning outcomes	On completion of this module students will have gained experience of working with an organisation solving a problem involving data analytics.They should be able to demonstrate: • how to negotiate, specify and define a problem and design a method of solving the problem with the resources, facilities and time available. • an ability to manage the task of solving the problem and effecting a solution using scientific knowledge, initiative and skills.
Outline syllabus	The student will work on a research project defined between the student and an external organisation. The aims of the placement will be defined in terms of progressive risks in effecting a solution. The first aim should have a low risk of failure; the second aim will be more challenging but capable of solution given initiative and energy on the part of the student; and the third aim can have a 'blue skies' element, a real research challenge and consequently a high risk of failure but success will demonstrate exceptional competence and initiative. Students in an external placement will have the opportunity to work closely with the external organization.

Details of private study and independent learning	This is part of the ESRC CDT 'A Centre for Doctoral Training in New Forms of Data'. The successful proposal for the integrated MSc and PhD 'Data Analytics and Society' specifies the inclusion of an internship module. The internships will be undertaken by each student and could involve up to 3 months at a remote location, but will often be shorter. A balance of local and remote projects has been assumed.
Rationale for teaching and learning methods and relationship to learning outcomes	A critical element of the CDT is collaboration with non-academic partners. These are vital for several reasons: as a key source of new data, as a source of insight into social problems and the associated requirements, and as collaborators in the provision of training and capacity-building. This module speaks to the third of these reasons. Partners will be a mix of global, national and regional business, government and third sector. We expect that most of these partners will contribute data to projects and that they will usually play a strategic role in the supervision and direction of projects e.g. within a six monthly cycle of review and research support. Many of them will host students on an occasional or extended basis within their own organisations and we expect that many of them will participate directly in the thematic clusters which are established around our research topics. A deep engagement with the partners with whilst under continued supervision from their academic supervisor will enable the students to learn about applying data analytics in real world settings.
Monitoring of student progress	Through email communication with student's supervisors and non-academic partner
Rationale for assessment and relationship of assessment methods to learning outcomes	The project report allows students to describe the analyses they undertook during their internship and to reflect on the nature of working in the commercial arena. The presentation provides them with experience of presenting their work in front of other people. The supervisory sessions / tutorials provide the students with an opportunity to discuss progress with their supervisors and they act as check.

Research Project module

Module summary:	This is a research project complementary to but separate from the PhD research project. This will be an important piece of work but less heavily weighted than the traditional dissertation. It will involve the articulation of research objectives, an outline literature review and indicative methodology. It provides students with the opportunity to undertake a major piece of supported independent research. It is an opportunity to apply skills and techniques learned during the taught component of this programme to a substantive original research or industry focused problem of interest to the student. Dissertations will be supervised by academic staff from the Centre for Spatial Analysis and Policy (CSAP) or other appropriate members of CDRC. Individual projects and research questions are chosen and formulated by students, and supported during the research process by one-to-one or small group meetings with a nominated member of academic staff, and student-led group meetings to seek peer support. The dissertation may address a methodological or practical issue using desk based research and secondary data sources or may involve primary data collection. It may also be carried out in conjunction with an external organisation (such as local government, a charitable organisation or a commercial organisation) in order to address a relevant research or practical issue of interest to them, and making use of their data or other input. Regardless of the nature of the project itself, all dissertations must have a clearly defined aim and set of specific objectives that are novel or original and which relate to this programme of study. All dissertations should be written up as an academic piece of work, using the guidance provided during the module.
Module objectives:	To provide a valuable stepping stone towards the main thesis project, and a good applied test of professional skills in a research environment, drawing on core research skills alongside some more advanced elements. This module seeks to: • Enable students to develop and undertake a substantive piece of independent research related to Social Analytics, addressing original practical issues identified through independent research, the commercial and policy sector where appropriate.

	• Allow students to demonstrate that they can work independently on a series of research questions over a sustained time period, making effective use of support available and problem solving independently where required. • Give students a supported opportunity to apply skills, methodologies and techniques introduced within this programme in order to address a research question of interest to them. • Give students the opportunity to personalise their learning experience by researching a topic of interest to them, and of relevance to their future career and professional development objectives.
Learning outcomes:	On completion of this module students will be able to: • design, executing and presenting a sustained piece of novel or original research related to Social Data Analytics. • work independently on a substantive research question, using initiative and reasoned thinking to problem solve. • select, apply and critically evaluate appropriate spatial and statistical analysis techniques and/or theories in order to address their research questions. • Be able to communicate research findings in an academic style, situating their findings within the broader academic literature and wider developments in the field or industry sector.
Outline syllabus:	This module is primarily made up of private study, with scheduled or ad-hoc individual/small group meetings with students' dissertation supervisor or other module staff as appropriate. The learning and execution of the dissertation is student driven and students are expected to work on their dissertation full time over the summer months. The methods and techniques appropriate to execute independent research have been introduced throughout the taught component of this programme In addition to the support of their supervisor, students also benefit from dissertation briefing sessions which include: • Choosing an original research topic • Identifying appropriate literature • Project managing a dissertation • Writing-up a dissertation

Details of private study and independent learning:	This module is primarily composed of private study as students work independently on their dissertations. Students are expected to work on this full time during the summer period and projects are student driven. Private study encompasses all aspects of the dissertation process, including topic choice, data acquisition, literature searches, data analysis and final write-up of the submitted dissertation.
Rationale for teaching and learning methods and relationship to learning outcomes	The introductory lecture will set the frames of reference for the work, especially the issues around overlap with PhD study including the design, execution of the research. Private study will develop skills in working independently on a substantive research question, using initiative and reasoned thinking to problem solve. The supervisory meetings will allow the students to demonstrate their learning and critical evaluation of appropriate spatial and statistical analysis techniques and/or theories and to communicate their research findings in an academic style.
Monitoring of student progress:	Progress will be primarily monitored via individual supervision, comprising student-led scheduled or ad-hoc contact with their supervisor, to discuss their research and to identify any problems they are facing. Students will receive verbal/email advice/suggestions/comments as a result of these interactions, and supervisors will be able to identify students who may need further support to meet the LOs of this module. Additionally student progress is monitored via their research proposal, enabling students to be matched to an appropriate supervisor and screening to ensure that chosen topics and approaches are feasible and in line with the module objectives.
Rationale for assessment and relationship of assessment methods to learning outcomes	The dissertation and the associated proposal will allow students to develop and then demonstrate their achievement of the following LOs: • to design, execute and present a sustained piece of novel or original research • work independently • to apply and critically evaluate appropriate spatial and statistical analysis techniques and/or theories in order to address research questions.

	• to be able to communicate research findings in an academic style, situating their findings within the broader academic literature and wider developments in the field or industry sector.

Appendix B: Finance

The CDT funding is for one year in the first instance, and renewable subject to satisfactory progress. The funding is provided for 4 years, covering fees, maintenance (stipend) and research training costs. It does not provide funding for the fifth "overtime", i.e. Submission Pending, year so it is important to bear in mind that there is a fee of around £200-£400 for this year. You will need to budget for this and any maintenance costs if you go into your overtime period.

Stipend

The National Doctoral Stipend for 2022-23 is £16,062. This will be paid in monthly payments in advance directly into your bank account, subject to you completing registration.

Research Training Support Grant (RTSG)

You will incur expenses carrying out your doctoral research; these will vary in the amount and type of expense depending on the research you are undertaking. You may need to fund field work, surveys, secondary data purchase, laboratory analysis or the use of external facilities such as high speed computing. You are strongly encouraged to participate in academic meetings, conferences and workshops and to present your findings and you may also need to attend university-run or external training courses, which may incur some expense. With this in mind postgraduate students are provided with access to Research Training Support Grant (RTSG) funds.

The RTSG is intended to be used to pay for expenses which the student and supervisor deem to be in direct support of a student's research and training. Examples are:

(i) UK and overseas fieldwork expenses;
(ii) UK and overseas conferences and summer schools;
(iii) Language training courses usually undertaken in the UK prior to an overseas fieldwork trip;
(iv) Reimbursement of interpreters, guides, assistants;
(v) Survey costs, e.g. printing, stationery, telephone calls;
(vi) Purchase of small items of equipment for example cameras, tape recorders or telephone and photocopying facilities in their outlet (some small items may be available to hire from your School).
(vii) Books essential for your research.

In exceptional circumstances, the Centre may consider requests for the purchase of 'equipment' from this allowance. Any such request must be clearly and adequately justified based on the nature of the research being undertaken and as being essential for the successful completion of the PhD. In these instances, any equipment purchased worth in excess of £200 will remain in the custody of the University following completion. Students may only claim from their RTSG during their funded period of study (i.e. when maintenance and fees are paid) and not during the writing up period. Students should note that they also cannot pay in advance from their RTSG for activities/items taking place after the end of the standard funding period. Overtime fees cannot be paid from your RTSG account. The funds for RTSG are pooled at a Centre level, however as a guideline we would expect students to spend up to £750 in any one year.

Agreeing your budget

In the month after arrival, each student should discuss their funding arrangements with their supervisor(s). A budget for your research costs must be prepared on the budget pro- forma. Please provide a signed copy for the form to the Centre Manager (datacdt@leeds.ac.uk) by the end of your first month of study. You should continue to review this budget through the course of your degree.

Making purchases and claims

Before you make any purchases in support of your research please read the information on eligible expenditure:

http://www.leeds.ac.uk/finance/policies/expenses/index.htm

Please complete the RTSG approval form and return to the Centre Administrator (datacdt@leeds.ac.uk). Items up to £100 don't need to be approved in advance, however you will still need to complete the approval form and return with an expenses form to claim back the funds.

In some instances, purchases can be made for you by your local administrator, this will need to be done for IT software, paying individuals and some high cost items such as international air fares. Once your RTSG form is approved the Centre Manager will send details of the purchase to your local purchasing team to arrange this.

Other items can be bought by you and claimed back through expenses at the University of Leeds. Please return your RTSG approval form with an expenses form to the Centre Manager. Please note that claims must include

original receipts and be submitted within 6 weeks of the end of the trip or purchase. All expenditure on your accounts must comply with Leeds University financial regulations:

https://www.leeds.ac.uk/finance/policies/index.htm

Expenses must be authorised by your supervisor BEFORE you send in the claim. Unauthorised claims will be returned. Expense claims are paid on a Friday. The cut-off date for receipt of the approved form is two weeks before payment. For example, a claim received on week ending Friday 2nd October would be paid Friday 16th October.

Travel to modules not at your 'home institution'

You can reclaim the cost of travel to the core modules hosted at other institutions. The mode of travel should be based on availability, timing and cost. The most cost efficient manner should be used wherever possible, whilst considering safety and environmental impact. Accommodation will be provided for students attending modules not at their 'Home University' and will be booked by the centre. Some catering will be provided during the course and you can claim the cost of evening meals for nights away from home up to a limit of £10 per day.

Widening Participation funds and Funding in exceptional circumstances

A Widening Participation pot is available for students to apply to in order to cover additional costs incurred due to caring responsibilities or to cover unexpected expenditure that cannot be covered from elsewhere. This fund cannot be used to cover general living expenses, research costs, University fines or debt.

Applications for funds from the Widening Participation pot should be made to the Centre Manager using the Widening Participation Fund form.

Risk assessment

You are required to fill in a Pre-Travel Risk Assessment Form *before you book any travel* and information about this is below:

In liaison with your supervisor (line manager), you are required to complete a Full Risk Assessment if your travel does not fall within the School generic risk assessments. If it falls within the generic risk assessment you will need to complete a SoSS Pre-Travel Risk Assessment Declaration.

Appendix C
Advice from your peers

"I wish someone had told me…"

Completing a PhD is a marathon, not a sprint. In fact, a better analogy would be to compare it to a long, offshore swim. Sometimes the sun is out, the sea is calm, you can see the shore and you're enjoying the journey – it's an adventure of discovery. At other times it can be dark, stormy, and scary. The worst is when you are fighting a current. Although you are straining every muscle and swimming as hard as you can, you might actually find yourself being swept backwards.

Sometimes your PhD will feel like this. But if you can plough on, eventually the tide will turn. As Winston Churchill is quoted as saying, If You're Going through Hell, Keep Going!

Below are some words of friendly advice from those who have navigated these challenging waters - current and previous PhD students.

"I wish someone had told me… it is ok to take a holiday."

My experience of doing a PhD has been a bit of a juggling act. As well as the PhD research there has also been bits of TA and RA work, and it has all had to fit around family commitments and volunteer work.

I have not been following a standard 9 to 5, Monday to Friday type of routine. It would be accurate to say that there has been a fair amount of flexibility to my study. Flexibility in fact, in my view, has been one of the perks of returning to student life, I can control my own workload and schedule my time to my needs. However, that often means feeling the need to work in evenings on the days I have been doing other things during the day, or working weekends when the weeks have suddenly passed and a deadline is looming.

So, how do holidays fit in?

When life is a holiday (because that's what student life is like right?), are we allowed to take a break? I have taken holidays over the past three and a bit years, but generally I would have optimistic hopes that I would read a few papers, or write a bit of that study up, or at least do some good thinking. Invariably I would not do as much work as I thought I would on

holiday and feel guilty, rushed and stressed when I got back to my desk. So much for a holiday.

But, I finally decided that it was OK to take a holiday, at the moment when it felt like I shouldn't, just after my three-year mark. I took two months off to visit family overseas and have some down time. I made a decision not to think about the PhD (too much) and to have a break.

The holiday was great, and what is even better is that I have come back motivated and optimistic about finishing my PhD. So it seems to have worked. It is OK to take a holiday.

"I wish someone had told me… how few people around you will find your research interesting."

At such a large University, with people working in so many diverse areas, it can be really difficult to find people with similar research interests (Except hopefully your supervisors!). If your research is at all interdisciplinary you need to look beyond your discipline area, and maybe even faculty, to find people to collaborate with, or just be enthusiastic about your research with.

"I wish someone had told me… prepare for travelling to conferences, short courses, etc. by yourself"

But do not let that fact prevent you from attending such events as they represent useful knowledge acquisition and networking opportunities. Also, do not be afraid to attend seminars, events, etc. within the university which you find interesting regardless of relevance to your research topic. This provides a way of appreciating the diversity within the university and seeing the place from different perspectives. And it could prove useful for your research and networking opportunities as well.

I wish someone had told me as I started my 2nd year: Try to present at both postgraduate and professional academic conferences that are relevant to your area of research as they can really help with developing your own research, i.e. writing papers, research methods, potential journal targets for your work, etc.

"I wish someone had told me…be prepared for your workload to increase in your 3rd year"

As well as completing the PhD, there will be possible journal article writing and revisions, applying for positions beyond the submission of your PhD thesis, etc. As the workload increases and the time left on your programme

decreases, please continue to engage with your colleagues and the university. This is a special time as you are on the cusp of achieving something great – please continue to share your journey with others.

"I wish someone had told me…to try connect your research to an organisation, institute or group beyond your own university"

This could enhance your research and the experience of doing your research. It could also provide further networking and employment opportunities.

"I wish someone had told me…to try write an article for peer-review publication."

Undergoing the peer-review process during your PhD helps strengthen your work and helps prepare you for viva.

"I wish someone had told me…that your supervisory arrangements may change over time as departmental staff seek out pastures new for themselves."

You are building something great for yourself and so are your supervisors. We are all on our journeys though life so we should make the most of the time we share together.