EPSRC/UKRI
Centre for Doctoral Training in Advanced Biomedical Materials

STUDENT HANDBOOK

2023/2024

CDT Advanced Biomedical Materials, The Universities of Manchester and Sheffield

@AdvBiomedMatCdt

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Welcome statement

Dear PhD Researcher

A very warm welcome to our Centre for Doctoral Training (CDT) in Advanced Biomedical Materials!

The CDT brings together research programmes from The Universities of Manchester and Sheffield. In Manchester this involves the Faculties of Science & Engineering (FSE) and Biology, Medicine & Health (FBMH), and in Sheffield the Faculties of Engineering (FoE), Science (FoS) and Medicine, Dentistry & Health (FMDH).

The CDT academic and administrative staff will support you throughout your PhD, providing a training programme that will aid you in developing interdisciplinary translational research skills. Our aim is for you to leave the CDT as an accomplished biomaterials engineer, and for you to become a leader in the field of biomedical materials aligned to patient healthcare, clinical translation and industrial need.

The structure of this CDT will see you start the programme in Manchester and either transfer to Sheffield or remain in Manchester depending on your research project. In the first three months of the programme you will be introduced to core skills for interdisciplinary biomedical materials research 1) Responsible Research and Innovation, 2) Imaging, Characterisation and Key Manufacturing Techniques, 3) Clinical Application of Biomaterials and 4) Research Methods.

Your entire CDT student cohort will study together in Manchester during the first four months of the programme. When you progress to your individual research projects you will either remain in Manchester or transfer to Sheffield University for the remaining 3.5 years of your PhD project. Up to the present time, once a student moves to Sheffield they will be paid every 3 months not monthly as in Manchester.

There will continue to be regular and timetabled opportunities for your cohort to meet up and share experiences and knowledge gained. As a CDT student you will benefit from many opportunities, such as international and industrial placements, not ordinarily available to conventional PhD students. A number of additional training elements will also be embedded in the programme. Most will be mandatory but some are optional. These are intended to be challenging, but at the same time thoroughly enjoyable - and will train you to be a future leader in this field. In return, we expect you to be fully committed to achieving your very best: what you get out of your training will reflect upon your effort and commitment.

It is very important to point out that all taught units in the first semester will be delivered in Manchester and every student is expected to attend in person regardless of whether they will transfer to Sheffield for their PhD project. Students' own RTSG funding should be used to fund any additional travel expenses. This condition is a key part of our placement offer. (NB: Students at Sheffield will be reimbursed for reasonable post Semester 1 travel expenses to Manchester after that).

You will be fully supported through every step of the programme. However, if you ever have concerns or problems that are affecting your work, then my door and that of the co-directors is always open.

For day-to-day questions about the programme you should contact the CDT Project Manager. You should also meet regularly with your Tutor (cohort meetings will be arranged at intervals with the CDT Tutor and Director).

Best wishes during your time with us as a CDT student!

Prof. Sarah Cartmell, Director, Prof. Julie Gough, Research Director (Manchester) and Professors Ipsita Roy and Gwen Riley. (Sheffield).

CDT Contacts

Professor Sarah Cartmell, **CDT Director and Head of Department of Materials**

sarah.cartmell@manchester.ac.uk

Professor Julie Gough, **CDT Deputy Director**

J.Gough@manchester.ac.uk

Professor Ipsita Roy, Acting CDT Director - i.roy@sheffield.ac.uk

Professor Gwendolen Reilly, Acting CDT Director - g.reilly@sheffield.ac.uk

Dr Alison Harvey, Teaching and Scholarship Lecturer in the School of Materials

alison.harvey@manchester.ac.uk

Dr Susan Hogan, **CDT Project Manager**

susan.hogan@manchester.ac.uk

Maria McGloin, **CDT Administrator** maria.mcgloin@manchester.ac.uk

Introduction to the Programme

Key aims

Biomedical materials have advanced dramatically over the last 50 years and continue to evolve today. With a rapidly growing and ageing population, there is greater demand for more efficient and effective healthcare, and this CDT will train an interdisciplinary cohort of students to compete in this field.

Our CDT is focused on training the next generation of internationally leading postdoctoral engineers who will enable innovation between industry, clinicians and academics to address areas of need. In order to do this, the CDT begins with a Manchester based three-month taught programme, with a subsequent integrated training programme throughout. (Please note: All students are expected to attend all teaching sessions in person). Also, in the first Semester, students will get the opportunity to meet with their academic supervisors and, if relevant, their industry partners to discuss any remaining queries or concerns they may have relating to their chosen project.

Our CDT combines the strength and track record in biomaterials innovation, translation and industrial engagement at The University of Manchester and The University of Sheffield, aligning with the needs of the UK for resource, skills, industrial collaboration and cohort training.

Research will focus on developing and translating smart and responsive biomaterials with a particular emphasis on higher throughput, greater reproducibility of manufacture, and characterisation. Students will work with industry partners and undertake clinically-relevant research and advanced projects at Manchester and Sheffield - helping to forge the next generation of UK leaders in biomedical materials research.

The University of Manchester

Engineering Buildings A and B
The Centre for Doctoral Training will be moving to its new home of engineering and material science at The University of Manchester in August 2022.
https://www.mecd.manchester.ac.uk/

Part of the Manchester Engineering Campus Development, (MECD), Engineering Buildings A and B sit alongside Oddfellows Hall, the James Chadwick Building and York Street Building. Unrivalled in scale in the UK as a hub of engineering and material science expertise, it combines Manchester's heritage as the birthplace of the industrial revolution with new purpose-built facilities that will deliver a step-change in our approach to solving some of the world's most pressing issues.

In the Engineering Buildings A and B, you'll immediately have access to new lecture theatres, bookable meeting and teaching rooms and an extensive range of informal study spaces with both PCs and touchdown spaces for your own device. By September 2022, we'll be fully open with additional research facilities, lab spaces and our dynamic new maker space, where students can let their creativity and entrepreneurial ideas run free.

Henry Royce Institute

Some of our students will relocate to the Henry Royce Institute when taught units are completed. The Henry Royce Institute is the UK's national institute for advanced materials research and innovation. Its vision is to identify challenges and to stimulate innovation in advanced materials research to support sustainable growth and development.

Campus Map

For Royce Hub see building No. 126

For Engineering Building A and B See building No. 24 and 25

University of Sheffield

The primary locations and CDT facilities at The University of Sheffield are:

1. Kroto Research Institute (building 192) - Department of Materials Science & Engineering

2. The Sir Robert Hadfield Building (building 172) - Department of Materials Science & Engineering

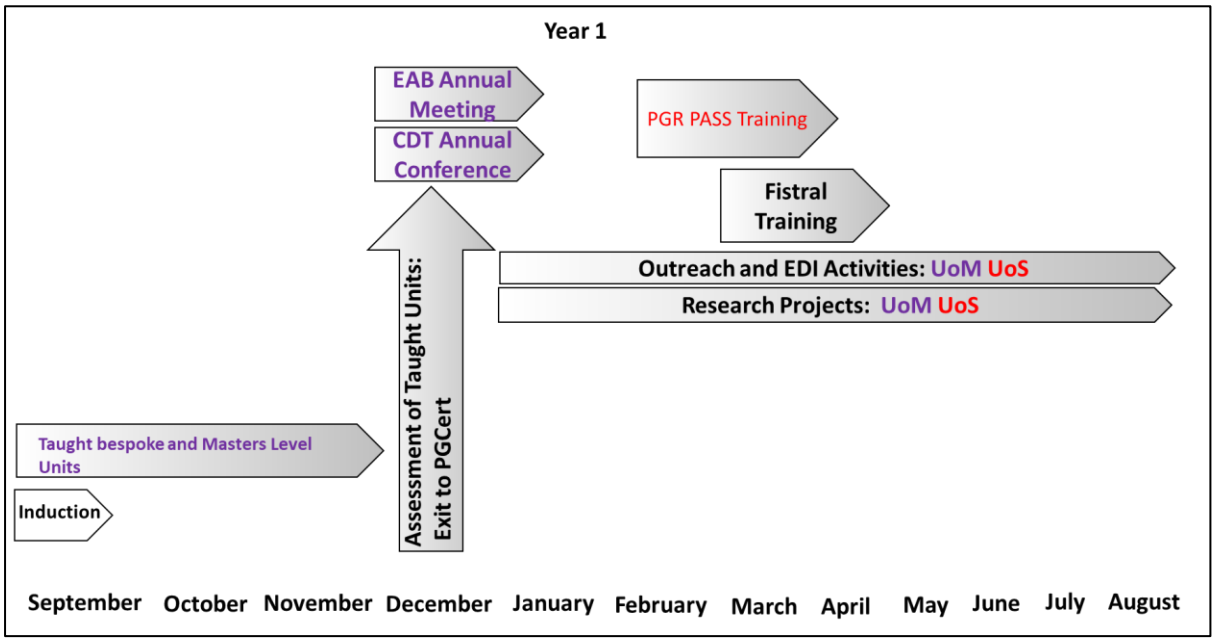
3. Henry Royce Discovery Centre (building 177) - Department of Materials Science & Engineering

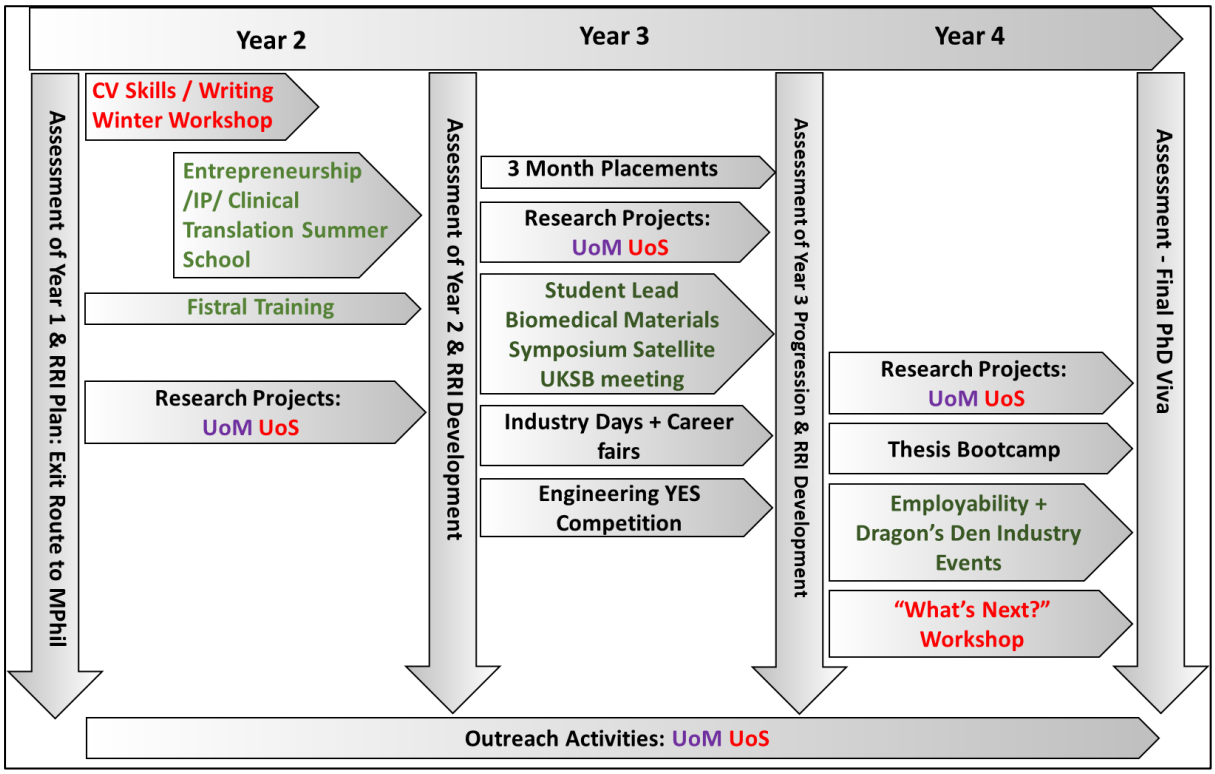
Campus map - https://www.sheffield.ac.uk/visitors/mapsandtravel/university

The CDT student journey in Advanced Biomedical Materials

Year 1 and across years 2 to 4.

The structure of the training elements is designed to ensure that cohort learning is embedded across all four years from the outset.





Taught Component/Training and Assessment

Technical Training
The three-month taught programme includes four x 15 credit taught units to provide a solid foundation in Advanced Biomedical Materials:

Taught Unit codes/lecturers:

1) **MATS64211** Research Methods
   Enrique Jimenez Melero, Chris Blanford, Zhu Liu
2) **MATS65331** Clinical Applications of Biomaterials
   Julie Gough, Sam Jones, Ahu Gumrah Parry
3) **MATS64231** Imaging, Characterisation & Key Manufacturing Techniques
   Alison Harvey
4) **MATS64241** Responsible Research & Innovation (RRI)
   Alison Harvey

Please note: Each of the four units has 30 contact hours associated with it. The 'notional learning hours' for each unit is 150 hours (including the 30 contact hours, pre-reading and coursework etc.)

MATS64211 Research Methods - This unit will take you through the principles of applying the theory for planning and managing individual research project. It covers the design and development of experimental research, the application of technical data, analysis and visualization methods, and how these can be applied to solve research problems. We combine this with practical training on sample preparation, materials examination, testing, and a group study combining taught examples and self-learning with a skills and team project.

Assessment - Will include a group poster, group presentation, online Blackboard quizzes on statistics, data analysis and experimental design.

MATS65331 Clinical Application of Biomaterials - We will introduce you to examples of biomaterials currently used in the clinic. You will be introduced to the concept of biocompatibility including local and systemic effects, cell and tissue interactions, toxicology and inflammation. We will then focus on soft and hard tissue biomaterials, advanced therapeutics, drug delivery and tissue engineering.

Assessment - Will include group presentations on a press release and an individual journal review.

MATS64231 Imaging, Characterisation and Key Manufacturing Techniques - We will deliver bespoke workshops and introduce you to advanced and state-of-the-art imaging and characterization techniques. Workshops will be held in the Royce Institute equipment suites, covering the theory and practice of instrument operation including hands on experience and an opportunity to conduct data analysis. You will attend talks and discussions with experienced clinicians to hear about and understand the typical problems patients endure e.g. chronic ulcers, an ACL operation, or peripheral nerve repair. This will allow you to understand and identify where the unmet clinical need lies, from the perspectives of the patient, the clinician and the technology used. Students will then work in groups to develop novel ways to address these needs and create a manufacturing, testing and characterization plan. A student group may e.g. choose to gain experience in manufacturing high-resolution samples on a Nanoscribe and progress this through to high-end biomechanical analysis in the testing suite.

Assessment – Will include a written report on the understanding of the equipment, and group work on solving a clinical challenge with both an individual written report and group presentation.

MATS64241 Responsible Research and Innovation (RRI) – This unit will interface with the internationally leading RRI research and good practice programme developed at UoM, and the EPSRC's own ORBIT project (orbit-rri.org) and will be embedded throughout the programme. You will learn about the key areas of RRI and how these are relevant to biomaterials research. You will explore ways to incorporate RRI into your PhD research taking in to account broader impacts, benefits, controversies and re-design of projects. The main aim is to engender reflective critique, discussing research ethics and integrity actively with a forwards view of planning research.

Assessment – Will include online evaluation, self-assessment reflection, a mini-workshop, and the completion of an RRI portfolio.

***Please refer to MyManchester for details of exact timetable. Timetables are issued in September and are subject to possible revision. Details of any changes will come from unit leads as and when appropriate.**

Supervision, personal development and pastoral care
From 1st February onwards each year (i.e. at the start of PhD projects) students are expected to have fortnightly meetings with their supervisory team. These meetings will ensure that any personal development or planning deficiencies are rapidly identified, and where necessary appropriate remedial action taken (e.g. attend training to become proficient in a particular technique). Each student is expected to perform a regular skills audit, so that they are aware of their own progress and development needs. Skills audits are tracked using eProg. **(Please refer to Appendix 1 for an example of eProgression student milestones)**

Initially students will be assigned a tutor (the CDT Director or Deputy Director) for Semester 1 who will be their first point of contact for pastoral and technical guidance. The CDT Project Manager will be the first point of contact for administrative and operational support along with the CDT Administrator throughout the entire PhD programme. The Deputy Director of the CDT will meet with all cohort members monthly until research projects begin in February.

Once a student embarks upon their PhD research project (February 2024), they will be guided by their supervisory team. Typically, this team will consist of a supervisor, co-supervisor, industrial supervisor (where relevant) and an independent advisor. Research progress will be monitored by the various supervisors, with the expectation that students will meet with their main supervisor at least twice a month. There will also be regular meetings with the co-supervisor and industrial supervisor to get their technical input/advice. The advisor's role is more pastoral than scientific, and meetings with this person will normally be quarterly. **NB: It is the student's responsibility to make contact and arrange meetings with their allotted supervisors. Students are also expected to identify their own pastoral advisor, ordinarily a person who is not directly associated with their research project. Alternatively, students may wish to contact the Project Manager in complete confidence who will be happy to meet in person or virtually.**

Beyond the CDT, each student will have access to all of the normal University support services, ranging from academic training (e.g. academic writing and presentation skills) to pastoral (e.g. Disability Advisory & Support Service, Counselling and Manchester's own 'Six Ways to Wellbeing' initiative). Please click on the following links for more information:
https://www.researcherdevelopment.manchester.ac.uk/

COMPULSORY Transferable Skills Training

In addition to the formal CDT training programme, you will be tutored in transferable skills such as project management, dissemination and multidisciplinary communication.

Through your project you will also gain an understanding of one or more of the following:

- Bioelectronics
- Fibre technology
- Additive manufacturing
- Improved pre-clinical characterisation
- Manufacturing scale up
- Reproducibility

Advanced Training

(Please refer to Appendix 2 for an example of your training schedule in Semester 2)

Year 1

- **Project Management**

As a cohort you will be based in Manchester for a 2 day consultancy event focused on strategic project management. Fistral training in future years will include: building resilience, working smarter, managing stress at work, being a team player, assertiveness, dealing with workplace conflict, networking, becoming a leader, influencing without authority, empowering a team, Microsoft project training and preparation for professional accreditation. Fistral Training and Consultancy Ltd has been providing highly successful practical training courses and consultancy to major organisations and universities throughout the UK and abroad since 1991.

Specialising in delivering expert tuition and support, they assist organisations in maximising efficiency by providing participants from graduate to board-level with new skills and practical techniques that can be confidently applied to improve performance and delivery.

Year 2

- **Autumn workshop (compulsory)**

As a cohort you will undertake a 2 day autumn workshop focusing on regulatory affairs for biomaterials and medical devices. Key opinion leaders will be engaged to deliver
talks and workshops on topics covering:

  - Technical considerations for commercialisation of biomaterials
  - Good clinical practice in biomaterials research
  - The roles and responsibilities of key stakeholders in the regulation of biomaterials
  - GMP for biomaterials
  - Pathways to pre-market approval
  - Pre-clinical evaluation of biomaterials
  - An introduction to clinical trials and post-market surveillance

- Cohort sessions include the opportunity to raise further questions encouraging in-depth discussion with tutors on individual topics. This will encourage the importance of shared learning and network building between participants.

- **Spring workshop (compulsory)**

  As a cohort you will have the opportunity to contribute to a workshop covering Scientific Writing, Communication and Presentation skills. The workshop will be held off-site over 2 days and follow a 'Gordon Conference' style, allowing networking between plenary sessions, interactive workshops and one-to-one sessions. The overall aim is to develop and refine written and oral communication skills for clear and effective communication of complex research to technical and lay audiences. Cohorts will take part in practical exercises (e.g. mock radio interviews), one-to-one writing clinics with tutors, covering scientific abstracts, posters, oral presentations, the PhD thesis, getting published (authors and editors perspectives), working with the media (TV, radio, newspapers, social media), for both scientific and public communications.

- **Careers Event (compulsory)**
  This 1 day event in Year 4 is where UK industries will be invited to engage with students about what comes next in terms of career expectations. The '*what next'* section of this event will see the cohort identify what skills are used on a daily basis in postdoctoral roles such as project managers in industry, academic professors, through to biomedical engineers. A speed dating session will then allow each student to have the opportunity to pitch their skills and interests to each industry representative, who in turn will guide students on what it is they are looking for in the next 6 months, thereby assisting with final student destinations.

- **Thesis Bootcamp (compulsory)**
  A 1 day event with training courses on thesis layout - examples of different theses will be discussed and demonstrated - as well as group activity discussing student plans for thesis layout and a chance to get some feedback on this from other academics and peers. Tips to assist in thesis writing will also be covered.

Webinars of local seminar activity - In addition to the structured outlined activities above, there is the opportunity to create a live web link for regular Manchester and Sheffield seminars to be available as webinars to students at each of our host sites.

- **CDT Conference (compulsory)**
  An annual ABM CDT conference will be organised by students (with office support) to develop your event management skills. This will be held in December each year immediately prior to the annual meeting of the CDT's External Advisory Board. Cohorts will be able to engage, network, disseminate their work and gain peer / academic feedback. It will also allow interactions with other cohorts. The External Advisory Board will attend and be able to see the content and quality of the research being undertaken and the effectiveness of training taking place. Year 1 and 3 students will give an oral presentation, and year 2 students, a poster. Year 3 and year 4 students will also be encouraged to present at international conferences.

- **Industrial / International academic placements (Optional)** In year 2 or year 3, (possibly 4), you will undertake a co-created research placement of 3-months with either an industrial or international partner. Further details will be sent to all students nearer the appropriate time.

- **EngineeringYesCompetition**- (Optional) A national competition (http://www.yescompetitions.co.uk/index.aspx) aimed at "turning good engineers into great entrepreneurs" for PhD students. It will be an *optional* entrepreneurial training opportunity for CDT students. It develops business awareness and an understanding of UK entrepreneurship, takes place over 3 days and is based on teamwork. You will attend sessions with leading figures from Industry. Groups prepare an oral business plan for their idea, and present it before a panel. Two teams from each workshop are selected to attend the final hosted by The Royal Society. Annual submission of applications – March/July; Workshops – October; Final – December. CDT students can apply at any point throughout their PhD programme by contacting Julie Gough, Research Director.

- **UK Society of Biomaterials Conference satellite symposium (compulsory)**
  In order to ensure the CDT cohort is networking with national leaders in the biomedical materials field, all students will be expected to contribute to the wider annual UKSB Conference held in June/July each year.

- **PGR support training drawing on the Peer Assisted Student Support (PASS)** initiative. (Optional)
  PASS is a Manchester initiative that has run very successfully in undergraduate programmes and an informal version of this will be utilized for the first time for PGR students in this CDT. It is a student-owned and student-led activity to assist in their learning by providing mentoring support by peers in upper years. It facilitates knowledge sharing and sharing of best practice amongst cohorts. PASS has been recognised internationally as a UK benchmark, and is now formally recognised as the PASS National Centre. PASS operates by using trained higher year students (PASS Leaders), who work together to facilitate regular study groups usually comprising 6-12 lower year students (attendees). It is expected that by Year 2 sessions will take place regularly, one-hour

timetabled slots at a time available to all students, although they will not be compulsory. The intention is to promote collaborative learning through exploratory discussion and provide an opportunity for PASS Leaders to share their experiences of the course, thus 'demystifying' the higher years of study and building the attendees' confidence to progress through university. Of particular importance is that discussions in PASS are based on existing course material – information that has already been received by attendees or that which is in recommended texts. This helps to ensure PASS Leaders are not engaged in the delivery or teaching of new material. Additionally, Leaders do not re-teach material but instead encourage students to compare notes, clarify what they read and hear, analyse, criticise, question and seek verification of ideas. In addition to consolidating knowledge of the subject and gaining deeper conceptual understanding, study and learning strategies are integrated into sessions. First year CDT students will be mentored by existing CDT students or similar, in each geographical location. PGR Support meetings will be arranged by the students every c. 3 months fostering the interaction of geographically disparate groupings through encouraging use of shared internet spaces, such as Slack. Utilizing this existing infrastructure will contribute to establishing and maintaining communication/dissemination within and between cohorts. All CDT students (Manchester and Sheffield) will have access to these training sessions.

Progression and Assessments during the Taught Components

Your work will be assessed throughout the taught element of the programme (months 1-3). In order to progress to the research component of your programme you must achieve a minimum of **50**% overall in your taught units. You cannot progress if you obtain a mark of less than **40**% in any one unit.

The submission deadline and guidelines for the submission of assessments will be provided by the tutors for each unit. The deadlines will also appear in Blackboard In the majority of units, this will involve the submission of written assignments via Blackboard. You can access Blackboard via My Manchester: https://my.manchester.ac.uk/

(Please refer to Appendix 3 for an example of the coursework deadlines)

All assignments submitted via Blackboard will go through the University's plagiarism checking software, Turnitin. If you are unsure about referencing your work appropriately or have any concerns about this please contact the tutor for that unit or re-visit the online plagiarism unit. Please see **Section 7 of the School of Materials Postgraduate Research handbook** for further information about plagiarism. If you have any problems accessing Blackboard or submitting your assignment online please contact: https://www.itservices.manchester.ac.uk/help/elearning/

Unit Descriptions/Specifications
Unit descriptions or specifications provide the aims and learning outcomes for each unit and details of the assessments that will be set for each unit. These can all be found in the CDT in Advanced Biomedical Materials Community Space in Blackboard via My Manchester.

Late Submission
Late submission is not permitted for assessments without prior permission from the unit leader or the CDT Project Manager. If you are unwell, you should contact the CDT Project Manager as soon as possible, susan.hogan@manchester.ac.uk (You will be required to provide a doctor's note if more than 7 days sickness). Please be aware that the unauthorised late submission of an assignment may result in your assignment not being marked. If this occurs, you will be given a mark of '0' for that assignment. **Please note:** ***IT failure is not considered a reason for late submission and it is your responsibility to ensure you make suitable back-ups of any coursework.***

Opportunities for re-assessment
You will be given one further opportunity for re-assessment if an overall unit mark falls below **40%** on the first attempt. This will be granted at the discretion of the Board of Examiners for the programme.

External Advisory Board
An External Advisory Board (EAB) has been appointed by the CDT Directors and new students will have the opportunity to meet members of the Board in December 2023 at the annual CDT conference which falls the day before the EAB Annual Meeting. The Board ensures that assessment and examination procedures have been fairly and properly implemented and that decisions have been made after appropriate deliberation. They also ensure that standards of awards and levels of student performance are at least comparable with those in equivalent higher education institutions. Other duties include advising the Management Committee and promoting the CDT.

Blackboard
Blackboard will be used to provide you with access to lecture notes and other resources for each unit and to a number of online training courses that you must complete during your programme. Blackboard can be accessed through My Manchester: https://my.manchester.ac.uk/

All marks and feedback from assignments will also be provided through Blackboard.

The CDT also has a dedicated community space in Blackboard where general information about the CDT programme will be kept for the duration of your programme. This will include your handbook, training course information, journal club papers, timetables, information about seminars etc.

Plagiarism and Academic Malpractice
The consequences of plagiarism or any other form of academic malpractice can be severe. The University considers academic malpractice committed at postgraduate research level to be serious. In the most grave of cases, the student may be expelled from the University without being permitted to complete their degree, or they may receive a lower degree e.g. an MPhil instead of a PhD. You should make every effort to ensure that the work you submit for assessment is always your own, written in your own words and presented with appropriate referencing.

Plagiarism Prevention Online Course
At the start of the academic year, you will be required to complete an online Plagiarism training module and submit an electronic declaration to certify that you understand what plagiarism is and that you agree to abide by the University's policy and statement on plagiarism. This course can be referred back to at any time during your studies.

University Guidelines
You should read the University guidelines on academic malpractice very carefully and direct any questions to your supervisor if you are in any doubt about what constitutes plagiarism or other forms of academic malpractice: For more information click on: Plagiarism and Academic Malpractice

The University subscribes to a plagiarism detection service. Your work may be requested in an electronic format for submitting through the plagiarism detection software at any time. (Turnitin).

Procedures for Dealing with Plagiarism. Any suspected incidence of plagiarism or academic malpractice involving postgraduate research students will automatically be referred to the University Student Discipline Committee. The result of examination of a PhD or MPhil thesis will be withheld until all relevant investigations have been concluded. Please see: Plagiarism and Academic Malpractice – Guidance for Students

Attendance
Attendance during the taught component (first 3 months)
In person attendance is expected for ALL parts of the CDT taught programme in order for you to obtain the required number of credits to pass the taught component. Attendance will be monitored throughout the units.

Holidays
You are entitled to 6 weeks (30 days) of holiday per year (in addition to statutory bank holidays and University closure days. Any holidays that you need to take should be **previously authorised** by the CDT Project Manager (during the taught period) or your supervisor (during your research), and then communicated to the CDT Project Manager. **Holidays should not be taken during the taught component.**

Absence / Illness
You must notify the CDT Project Manager as soon as possible if you are absent between one and seven days due to ill-health. Please do this via email susan.hogan@manchester.ac.uk

If you are unable to attend lectures or other teaching activities due to illness, you must provide either

- * A Medical Self Certificate (for absences of up to 7 days (including weekends and bank holidays). Form available at:

  http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=500

- * Or a doctor's note (for absences of more than 7 days) (including weekends/bank holidays)

Failure to submit a medical certificate or other appropriate documentation to explain your absence may result in loss of any claim that special circumstances be taken into consideration when academic performance or progression is assessed. Further information relating to holiday entitlement and sick leave can be found at: http://documents.manchester.ac.uk/display.aspx?DocID=8162

Illness during course assessments

If you are unable to complete an assessment or poster presentation due to illness, you must contact the CDT Project Manager and your unit lead for that unit as soon as possible. You will be asked to complete a mitigating circumstances form and provide supporting evidence.

(* See above link to access more information)

If an illness lasts for **8 days or more** a doctor's note is required. Although every attempt will be made to accommodate short-term issues with the provision of short extensions, these are granted at the discretion of the unit leadand the CDT Director. Longer term illness may require an interruption to your studies. Please note that holidays are not an acceptable reason for the late submission of assessments.

For more information on mitigating circumstances please see:
http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=23163

Supervision Arrangements
Year 1, months 1-5
A CDT cohort tutor will be appointed for each intake – your cohort tutor will be Julie Gough. She will be your personal advisor for the first 5-months of your programme, before you start your research project.

Year 1, months 6 -12 and Years 2-4

At this time (start of research project) an advisor of your choice will be identified by you along with your appointed main supervisor, the former will provide independent one-to-one pastoral advice and oversight throughout your PhD. CDT PhD projects are expected to be interdisciplinary and each student will have at least a main and a co-supervisor with different research backgrounds to ensure interdisciplinarity. Meetings with supervisors will normally be fortnightly. Meetings with the independent advisor will follow the schedule on eProg.

Equality Diversity and Inclusion (EDI) Committee
It is expected that student representatives will sit on the EDI Committee which meets at least twice per year to review our EDI strategy. We are seeking volunteers from Cohort 5 to join the committee to help build the kind of environment you would like to see. Tom Shearer chairs this committee and will soon be contacting students to gauge interest in joining. The remit of the EDI Committee is as follows:

- To adopt an active leadership role in the workings of the CDT
- Identify and address challenges relevant to the topics and communities related to the CDT (academic and sectoral as necessary) with defined progress indicators;
- Improve the ED&I culture and associated practices (adapting strategies if necessary), taking account of long-term challenges and wider associated culture change;
- Support diverse recruitment and flexible support of staff and students with a range of backgrounds and personal circumstances, and is integrated into the CDT's management and monitoring plans as well as organisational policies.
- Specifically, address and action responsible research across the board
- Provide students with skills to progress careers and research

Responsible Research & Innovation Committee (RRI Committee)
It is expected that student representatives will sit on the RRI Committee which meets at least three times per year. We are seeking one volunteer to join the committee. Simon Webb chairs this committee and will in due course be contacting students to gauge interest in joining.

The remit of the RRI Committee is as follows:

- To review the marking of and outcomes from RRI coursework (and any associated EDI components)
- To coordinate provision of teaching between the CDT and Faculty.
- To act on information from Faculty (and other CDTs) on RRI training.
- To receive student feedback on the provision of RRI in the CDT
- To report back to CDT Management Team.

*Please note that all students are expected to include an RRI appendix (covering RRI issues encountered during one's project) with your final thesis.

Outreach Committee
The outreach committee will be chaired by Alison Harvey, and will consist of representatives from each year of the student cohort. It will design biomedical materials activities (via an Ideas Factory) for public & school engagement, and social media engagement routes e.g. twitter, videos (sciani.com). The Faculty's Communications & Marketing Team will assist with webpage (for recruitment and dissemination to industry, clinicians and public engagement) and blog (communication of key events and developing a forum for best practices/problems exchange) development; The Public Programmes Team, (delivers patient & public involvement across Greater Manchester, nationally & internationally) will deliver public engagement training. It is hoped that students will become STEM Ambassadors – a scheme run by the Museum of Science & Industry (Mcr), that trains people for outreach and organises events. Students and supervisors will write articles for the Biological Sciences Review magazine available to all 'A' level Biology students in the UK. Examples of outreach events to target: Manchester: BlueDot Festival (3 days of camping with music & science), British Science Week, Science Spectacular (part of Manchester Science festival), Royce Materials Summer School (high school children), ScienceX (non-traditional audiences via the Trafford Centre shopping complex), Community Festival (organised by the Office of Social Responsibility, UoM). Sheffield: British Science Week, Festival of the Mind (academics and experts from Sheffield's cultural and creative industries), Researchers' Night, Discovery Night, (public and school children), Engineering Imaginarium (engineering focused public engagement).

Please note: There is currently a collective Outreach project underway involving students from the ABM CDT and Textiles department who are working together to produce public/classroom activities conveying, in a fun way, what advanced biomedical materials are and how they are used. All new students are welcome to join the group just contact the Project Manager.

Management Committee
When agenda items allow, student volunteers will be invited to attend the CDT Management Committee for the first hour each time it sits. The Management Committee meets every 3 months and it is expected that student representation will be filled on a rotating basis.

Student Feedback and Student Representation

Student Representative Committee
The Student Representative Committee includes Stephen Richardson (Chair), Susan Hogan (CDT Project Manager) (when requested) and student representatives from each cohort. The role of the student representative committee is to seek out any issues cohort colleagues may have and table these for discussion. Students are also encouraged to give feedback on the course generally, for example in terms of teaching, learning, facilities etc. Please note that if a student has a personal issue to discuss outside of this forum they can do so through one of the CDT's academic or support staff.

Industrial and Overseas Placements

Between years 2-4, you have the opportunity to take up a 3-month placement that is suitable for your project and progression. These can be with a UK or international lab or with an industrial partner. We have several internal partners who are willing to offer placements and you will be provided with information on partners, research areas and locations in due course. International institutional partners have also stated a desire to engage with the CDT by hosting 3-month placements and co-creation of research projects.

Current international partners include but are not limited to, The University of Southern Australia, The State University of New York (SUNY, USA), The University of Melbourne (Australia), The University of Chile (SA), The University of Sao Paulo (Brazil), The University of Oregon (USA), The University of Toronto (Canada), The University of Florida (USA), Swinburne University of Technology & CSIRO (Australia), The University of Minho (Portugal), The University of Kuala Lumpur (Malaysia), IK4-TEKNIKER (Spain) and COMSATS Lahore (Pakistan). A range of student training experiences will be available. Some partners are ideally placed to offer very commercially focused research e.g. The Colleges of Nanoscale Science & Engineering (SUNY, New York), CSIRO (Australia) and IK4-TEKNIKER (Spain), whereas some are ideally placed to offer high quality fundamental research (e.g. University of Southern Australia).

Equally, there is also an international need to design and deliver affordable healthcare biomedical products, and this is possible through a very well established partnership with the IRC in Biomedical Materials (COMSATS, Lahore, Pakistan). (Please discuss any proposed placements fully with your supervisory team and the CDT Director in plenty of time as all placement proposals will need to be approved by the CDT Management Committee).

Equality, Diversity and Inclusion
Our vision is to become a beacon of excellence by creating a fair and inclusive research experience. Our mission is to generate life-changing research that impacts upon people and communities by creating supportive environments that allow everyone to thrive.

In the event that you encounter any behaviour or workplace culture that is inappropriate, exclusionary or unfair, we would like you to let us know so that we can create a positive research environment. You can contact Tom, Gwen or Susan to discuss any issues you may have in confidence on:
Alison.harvey@manchester.ac.uk

g.reilly@sheffield.ac.uk
susan.hogan@manchester.ac.uk

Exit Strategies

Exit strategies are built into years 1 and 2 of the PhD. All EPSRC, Manchester and Sheffield funded students will first enroll with Manchester at the start of the CDT programme, and after satisfactorily completing the 4 x 15-credit core units may obtain a PGCert (from Manchester) if exiting at this point. For those remaining, Exam Boards will be held in February and at this point students will know if they have achieved sufficient credit to continue with the PhD programme. If this is not the case, students will exit the programme here. An exit opportunity also exists for any student who has performed well but do not wish to continue in the programme after the first year. Students will then have the option of an MPhil rather than continuing towards a PhD.

Management and Governance

The CDT is directed by Professor Sarah Cartmell with Professor Julie Gough as Deputy Director at Manchester. The Sheffield team is led by Professors Ipsita Roy and Gwen RIley. The CDT will be managed by a Management Committee and will interface with the local Equality, Diversity and Inclusion Committee, External Advisory Board, Responsible Research & Innovation Committee, Outreach Committee and Student Representative Committee. Management of the CDT in Advanced Biomedical Materials also draws on the services of the respective Universities' Academic Progression Committees.

Management Committee - will operate in accordance with the policies, principles, regulations and procedures of the Universities of Manchester and Sheffield. It has responsibility for: overseeing recruitment, teaching, approval and allocation of research projects and appropriate supervision, training strategy and provision, and cost-effective management of the grant allocations and associated expenditure. It will also foster collaboration with external academic partners and industry and seek to promote exchanges and build partnerships across the wider international community.

Management Committee Members

Name	Affiliation	Role on CDT
Professor Sarah Cartmell	Department of Materials, Faculty of Science and Engineering, UoM	Director of CDT, Chair of MC
Professor Julie Gough	Department of Materials, Faculty of Science and Engineering UoM	Deputy Director of CDT
Dr Jason Wong	Division of Musculoskeletal and Dermatological Sciences, Faculty of Biology, Medicine and Health, UoM	Senior Lecturer and Clinical interface Lead
Professor Gwen Reilly	School of Chemical Engineering and Analytical Science (CEAS), Department of Materials Science and Engineering, UoS	Lead for UoS CDT student cohort Equality and Diversity Lead (Sheffield)
Professor Ipsita Roy	Department of Materials Science and Engineering, UoS	Lead for UoS CDT student cohort
Dr Stephen Richardson	Faculty of Biology, Medicine and Health, UoM	Student Representative Committee Chair
Dr Tom Shearer	School of Maths, Faculty of Science and Engineering, UoM	Equality and Diversity Chair

Professor Simon Webb	School of Chemistry, Faculty of Science and Engineering, UoM	Responsible Research and Innovation Lead
Student Representative	This is a rotating role shared amongst differing cohort members over the lifecycle of the programme	A student representative will be present for the first part of each MC providing there are no confidential matters to discuss

External Advisory Board - The CDT External Advisory Board is responsible for formally reviewing CDT progress annually to ensure that it remains internationally competitive and provides excellent postgraduate level training to its students. Members of the External Advisory Board include five internationally leading researchers, appointed by the Management Committee, and potentially co-opted members when appropriate.

External Advisory Board Members

Name	Organisation	Role/reason
Prof. Dr. Martijn Van Griensven	Maastricht University, Minderbroedersberg 4-6 6211 LK Maastricht	Internationally leading experimental trauma clinician to advise on translation of research in CDT
Ms Heather King	Addos Consulting Ltd, UK	Independent translational managing consultant to advise on industry interface with CDT activity
Katherine Freeman	EPSRC/UKRI representative	Funding stakeholder
Professor Milica Radisic	Department of Chemical Engineering and Applied Chemistry, The University of Toronto, Canada	International expert in advanced biomaterials and their medical application
Professor Felicity Rose	School of Pharmacy University Park University of Nottingham	International expert in advanced biomaterials and cell-biomaterial interactions
Professor Mia Woodruff	Faculty of Science and Engineering, Queensland University of Technology, Brisbane, Australia	International expert in advanced biomaterials and their medical application

Finance

The University of Manchester has primary responsibility for administering the EPSRC/UKRI CDT award. This includes paying students stipend and fees if registered at Manchester from years 1-4. Students transferring to Sheffield for their research project in the following February will have their stipends and fees administered by Sheffield. Stipend payments are paid monthly, in advance, starting on the 1 October. Once a student moves to Sheffield they will be paid every 3 months (in advance) not monthly as in Manchester.

Some travel and accommodation, especially for cohort level activities, will be made available to students. However, some other individual activities, may have to be paid for from students' Research Training and Support (RTSG) allowance. This may include individual conference registration which can be claimed back as expenses, using a standard expenses claim form (PR7). All expense claim forms must be completed with the appropriate codes and must be accompanied by original receipts for all items and sent to the CDT Administrator (Maria McGloin) as soon as possible. Prior to making any purchases (either individually or through the office) students are also asked to check the balance of their laboratory accounts to ensure there are sufficient funds available to make the desired purchase.

Please note that when projects begin in February students will be allocated a Research Training Support Grant (RTSG) which consists of £5000 consumables, £1500 project specific travel and £200 Outreach Activity p.a. over 3.5 years.

Terms and Conditions of Research Council Studentships

Your CDT studentship is governed by the Terms and Conditions of UK Research and Innovation (UKRI) Training Grants, with delegated responsibility for administration and setting/adherence of policy to the award holding Research Organisation (Manchester). For further details, please see:
https://www.ukri.org/funding/information-for-award-holders/grant-terms-and-conditions/

Acknowledging UKRI/EPSRC Financial Support

It is important that you acknowledge the financial support for your studentship training on any publications, posters or other written communications arising from your work. Your EPSRC/UKRI Centre for Doctoral Training in Advanced Biomedical Materials studentship grant reference number is: EP/S022201/1. Relevant logos, poster and Power Point templates are available in Blackboard or from the office.
https://online.manchester.ac.uk/webapps/blackboard/content/listContentEditable.jsp?content_id=_7574269_1&course_id=_59773_1

Reporting to UKRI/EPSRC

Please note that personal information on students selected for EPSRC studentships, together with information about their studies, is collected by the Universities on behalf of UKRI. Each year we are required to submit data via the JeS shared service reporting system. This mandatory information is crucial to enable UKRI to demonstrate how it is investing in postgraduate research training for the UK. Because of this, **any change to your registered status or circumstances must immediately be notified to the CDT Project Manager**. Failure to comply may result in your stipend payments being withheld or stopped without prior notice.

ResearchFish and Gateway to Research

The Research Councils have a responsibility to demonstrate the value and impact of research and training supported via public funds and as such they are required to provide information on the outputs, outcomes and impact of the research they fund to government and public bodies. Students are personally responsible for providing this information via ResearchFish, the online system the UK Research Councils uses to collect all researcher outputs. During your project you will receive details about engaging with ResearchFish following registration onto your PhD and you will be required to enter and submit data every year from this point until three years beyond your studentship period.

Therefore you should make sure that your contact details are kept up to date on ResearchFish for this purpose at https://www.researchfish.com/

Your Data
The terms and conditions of UKRI training grants awarded from 1st February 2015 place a responsibility on universities to provide information about students, supervisors and research projects. The Research Councils will use this information for monitoring purposes and policy studies in relation to their involvement with provision of postgraduate training. The data will be made available on the Research Councils' websites https://www.ukri.org/and other publicly available databases, including Gateway to Research (https://gtr.ukri.org/), and in reports, documents and mailing lists.

Data Management
The Research Councils take data management and sharing very seriously – you are therefore recommended to refer to Manchester and Sheffield University Research Data Management Policy. This governs data management and sharing for all our research activity:

Manchester
http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=33802

Sheffield
https://www.sheffield.ac.uk/polopoly_fs/1.553350!/file/GRIPPolicyextractRDM.pdf

Research Data Management is part of good research practice and will help you complete your research efficiently. Before the start of your research project you must complete a Data Management Plan in DMPonline. Training on Research Data Management is available in person and online via My Research Essentials. There is more information on the Research Data Management website or you can send any questions to researchdata@manchester.ac.uk

University Regulations and Policy
Manchester and Sheffield University ordinances and regulations, policies and codes of practice governing all postgraduate research students can be found at:

Manchester University
https://www.staffnet.manchester.ac.uk/rbe/rdrd/code/
https://www.staffnet.manchester.ac.uk/rbe/rdrd/ordinancesandregulations/

Sheffield University
https://www.sheffield.ac.uk/rs/ethicsandintegrity

It is your responsibility to familiarise yourself with the University regulations and policies which govern your research degree. At the first meeting with your supervisor, you will be asked to declare that you have read and understand these documents. You are specifically advised to familiarise yourself with the Code of Practice for Postgraduate Research Degrees.

UK Society Registrations
Registration for the following societies will take place on tbc as part of your CDT induction session.

1) **IOM3 – https://www.iom3.org/**
2) **UKSB – https://www.uksb.org.uk/**
3) **TCES - https://www.tces.org/**

Additional Important Information

Laptops
Each student will be supplied with a new laptop when they register, but do please note that students are responsible for insuring this themselves.

Information on the following topics may be found in your Departmental Postgraduate Handbook.

Wellbeing Support
If you are finding things difficult, there's lots of help available even when the University is not as open as usual. Take a look at the Support Website https://www.staffnet.manchester.ac.uk/wellbeing/ where you'll find plenty of resources to help you, from little things you can do to boost your wellbeing, to resources to help support your mental health, including the online community at Togetherall. If you are struggling to cope, Shout provides free, confidential support via text (text **Shout to 85258**), or you can speak to the Samaritans on 116 123.

The Counselling and Mental Health Service will be available 10.30-1.30, Monday to Friday to offer support to those who need it. You can contact the service by email and request an email response or for someone to call you back on a phone number you provide.
Email: counselling.service@manchester.ac.uk

Finally, the University has launched a 24 hour mental health and wellbeing support helpline, you can find more information about this here: http://www.studentsupport.manchester.ac.uk/taking-care/mental-health-helpline/ The 24 hour mental health helpline and app offers access to mental health support from trained counsellors and advisors who are ready to listen and provide help whenever you need it. It's anonymous, non-judgmental and available 24 hours a day, 365 days a year.

- Communications https://www.staffnet.manchester.ac.uk/dcmsr/communications/
- Printing https://www.itservices.manchester.ac.uk/students/printing/
- Lone Working and out of hours Access https://documents.manchester.ac.uk/DocuInfo.aspx?DocID=62200
- UKVI (UK Visas and Immigration) Student Support Services https://www.studentsupport.manchester.ac.uk/student-services/
- The University Language Centre https://www.languagecentre.manchester.ac.uk/
- Careers Service – https://www.careers.manchester.ac.uk/

Accommodation

- Please be aware that the University of Manchester only offers its accommodation on a **12 month** contract basis. This should be taken into consideration when signing a contract with UoM especially if you plan to move to Sheffield in the following February to take up a project there.
- Nightline (student run service) – A listening, emotional support, information and supplies service, run by students for students. https://nightline.ac.uk/
- Counselling https://www.counsellingservice.manchester.ac.uk/
- Childcare https://www.staffnet.manchester.ac.uk/supporting-students/student-parents/childcare/
- Discrimination, Bullying and Sexual Harassment https://www.reportandsupport.manchester.ac.uk/ https://www.staffnet.manchester.ac.uk/news/display/?id=13291
- Disability Advisory and Support Service http://www.dso.manchester.ac.uk/
- Sports Facilities https://www.sport.manchester.ac.uk/

- Learning resources available in the School
  https://www.researcherdevelopment.manchester.ac.uk/

Graduate Teaching Assistants (GTAs)

Those wishing to find out more about possible GTA vacancies should contact their individual departments in Semester 1. It is important to note that current policy is that **GTAs are only paid for training (at the standard rate of 2 hours per workshop) if they already have a GTA position.** In this case the department that employs them will pay them to train. If students take up GTA training BEFORE they get a job, they will not get paid and so our advice would be to WAIT until you get a job before you do the training.

Online training for GTAs is available comprising four compulsory course units. https://www.staffnet.manchester.ac.uk/fse/teaching-college/teaching-academy/gtahub/training/

Those interested in taking up a GTA position in the future may also be interested in acquiring a formal national qualification through the LEAP Programme.

Leadership in Education Awards Programme (LEAP)

LEAP supports students in documenting and evidencing their teaching excellence, and is an opportunity to receive a formal, national qualification for teaching. The programme is accredited by AdvanceHE (formally the Higher Education Academy (HEA)) and many of our graduate teaching assistants have completed the programme in order to be awarded an Associate HEA Fellowship (AFHEA).

You can complete the AFHEA programme through an oral presentation route (10 minute presentation plus 10 minutes discussion time) or via a written portfolio (1,500 words)
You will also need to submit two references and a mapping document which demonstrates how your experience maps to the UK Professional Standards Framework (UKPSF).
Further information about the LEAP programme is available through https://www.staffnet.manchester.ac.uk/umitl/teaching-development/leadership-in-education-awards-programme/or alternatively you can contact the LEAP Administrator at leap.cpd@manchester.ac.uk

AI Statement | Teaching and Learning Delivery | StaffNet | The University of Manchester

The use of Artificial Intelligence (AI)

AI tools have the potential to enhance learning, and can support inclusivity and accessibility when used appropriately. It is important that you understand the potential risks and benefits of these tools if you plan to use them during your studies.

You may use AI tools like any other resource to help you generate ideas, key themes, and plan your assessment, and you may also cite or quote content generated by AI systems. However, passing off work generated by AI as your own is plagiarism, and will be treated as seriously as plagiarism of another person.

Some Course Units or assignments may vary this position. In these cases you will be given detailed instructions on what is and isn't allowed, and may be asked to sign a code of conduct. If you are unclear about what is permissible, contact the course unit lead.

For more detail on the University's position on the use of AI in teaching and learning, see Artificial Intelligence (AI) Teaching Guidance.

For advice on how to acknowledge and cite content generated by AI see https://manchester-uk.libanswers.com/teaching-and-learning/faq/264824

Appendix 1

Example of eProgression student milestones

Unit Code	Title	Deadline
UVEXM0001	Expectations 1	30/11/2023
FEPSM0600	FSE Research Integrity Training	30/01/2024
FBMHM1010	Export Control	31/01/2024
FSESSPGR-IND001	PGR Student Health and Safety Induction Mandatory Module 1	31/01/2024
FSESSPGR-IND002	PGR Student Health and Safety Induction Module 2 - Working in labs/workshops	31/01/2024
FSESSPGR-IND003	PGR Student Health and Safety Induction Module 3 - Chemical Risk Assessment	31/01/2024
FSESSPGR-IND004	PGR Student Health and Safety Induction Module 4 - Biosafety	31/01/2024
FSESSPGR-IND005	PGR Student Health and Safety Induction Module 5 - Off-campus work (including fieldwork)	31/01/2024
FEPSM1000	Initial project planning meeting	28/02/2024
FEPSM1144	Skills Audit (Initial)	30/03/2024
FLSCM1030	Literature Report Submission	30/04/2024
FLSCM1040	Literature Report Meeting	21/05/2024
MATSS90005	RRI Plan	30/09/2024
FBMHM1070	Confirmation of Assessors and Viva Date	30/11/2024
UVEXM0002	Expectations 2	30/11/2024
MATSM90004	Student RRI Presentation	30/11/2024
FEPSM1900	Submit Year 1 progress report (if transferring/continuing on a PhD)	20/12/2024
FEPSM1990	First Year PhD Progression Decision	31/01/2025
FEPSM2244	Skills Audit (year 2)	30/03/2025
UVEXM0003	Expectations 3	30/11/2025
FEPSM2900	Submit Year 2 PhD progress report	18/12/2025
FBMHM2990	Second Year Report Meeting	31/01/2026
FEPSM3344	Skills Audit (year 3)	30/04/2026
UVEXM0004	Expectations 4	30/11/2026
FEPSM3900	Submit Year 3 PhD progress report	20/12/2026
FBMHM3990	Third Year Report Meeting	30/01/2027
MATSM0004	Submit thesis plan	14/04/2027

Appendix 2

Example of your training schedule

Cohort 5 Training and Events schedule						
2023/234 (YEAR 1)	**Sep-23**	**Oct-23**	**Nov-23**	**Dec-23**	**Jan-24**	**Feb-24**
	WELCOME WEEK 20 & 21 September	TAUGHT UNITS ABM CDT Annual Conference 4th December			Project Management in the Real World (22 & 23 Jan)	Visit to Science and Technology Facilities Council
	Mar-23	**Apr-24**	**May-24**	**Jun-24**	**Jul-24**	**Aug-24**
	Peer Assisted Student Support (PASS) Training	Peer Assisted Student Support (PASS) Training	Public Engagement workshop	STEM Ambassadors		

Appendix 3

Example of student coursework deadlines

Code	Course	Examination Coursework	Due Date
MATS64231	**Imaging, Characterisation and Key Manufacturing Techniques**	Key Manufacturing, Imaging and Characterisation Techniques for Biomaterials Research	**December**
		Clinical Challenge Written Report	**December**
		Clinical Challenge Group Presentation	**Week 12 (In session)**
MATS65331	**Clinical Applications of Biomaterials**	Press release interview presentation in pairs.	**December**
		Journal research paper critique	**December**
		Bb quizzes, one per lecturer	**November and December**
MATS64241	**Responsible Research and Innovation**	Summative online evaluation	**October**
		RRI journal evaluation	**December**
		Self-reflective writing	**December**
		Mini-workshop: Planning an RRI activity	**Week 12 (in session)**
MATS64211	**Research Methods - Group Case Study**	Group poster - A0 PDF	**December**
		Group presentation - 10 minute presentation + online form	**December**
		Peer evaluation - one-page form	**December**
		Summary report - One A4 page	**December**
	Research Methods - Experimental design and data analysis	Design of experiments - Three questions, online submission	**December**
		Data analysis - online quiz	**December**
		Data presentation - Four origin plots, online submission	**December**
	Research Methods - Literature review and project plan	5000 words	**February**