General Regulations for Higher Degrees in the Faculty of Engineering and Regulations for Doctoral Training Centres in the Faculty

The content of our courses is reviewed annually to make sure it is up-to-date and relevant. Individual modules are occasionally updated or withdrawn. This is in response to discoveries through our world-leading research; funding changes; professional accreditation requirements; student or employer feedback; outcomes of reviews; and variations in staff or student numbers. In the event of any change the University will consult and inform students in good time and will take reasonable steps to minimise disruption.

REGULATIONS FOR DOCTORAL TRAINING CENTRES IN THE FACULTY OF ENGINEERING

1. The programmes of study within the Faculty shall, subject to any provision in the Regulations for particular programmes of study, extend over:

(a) *one* year for both a Master's Degree and a Postgraduate Diploma for a full-time student, who will complete all components of the programme within the minimum period of study; *or*

(b) not less than *three* consecutive years for a part-time student for a Master's Degree, who will complete all components of the programme within the three year period; *or*

(c) not less than *two* consecutive years for a part-time student for a Postgraduate Diploma, who will complete all components of the programme within the two year period.

REGULATIONS FOR DOCTORAL TRAINING CENTRES IN THE FACULTY OF ENGINEERING

Regulations are presented in course code order. An alphabetical index of course titles is as follows:

MATR50	Advanced Metallic Systems	PhD
MATR56	Advanced Metallic Systems	EngD
MATR145	Advanced Metallic Systems	PhD
MATR146	Advanced Metallic Systems	EngD
DTER03	E-Futures	PhD
CPER05	Energy Storage And Its Applications	PhD
CIVR100	Energy Storage And Its Applications	PhD
EEER100	Energy Storage And Its Applications	PhD
MATR100	Energy Storage And Its Applications	PhD
MATR143	Generating Renewable Economic Energy from Nuclear (GREEN)	PhD
MECR07	Integrated Tribology (iTCDT)	PhD
MECR80	Machining Science	EngD
ACSR80	Machining Science	EngD
MATR80	Machining Science	EngD
CPER97	Machining Science	EngD
MECR09	Machining Science	PhD
MECR91	Machining Science	PhD
DTNT03	Nuclear Fission	PhD
MECR92	Resilient Decarbonised Fuel Energy Systems	PhD
MECR93	Resilient Decarbonised Fuel Energy Systems	EngD
COMR191	Speech and Language Technologies	PhD
CIVR103	Water Infrastructure and Resilience (WIRe)	PhD FT
CIVR104	Water Infrastructure and Resilience (WIRe)	PhD PT

CIVR103/CIVR104 WATER INFRASTRUCTURE AND RESILIENCE (WIRe) (PhD) (Full-Time/Part Time) (CDT)

(Joint Programme with The University of Cranfield)

For students whose initial registration is in 2019/20.

1. In Year One a student will take 40 credits of CDT-specific training, comprising three technical modules and attendance at the CDT Summer School, each of which comprise 10 credits.

2. In each of Years Two and Three a student will take 10 credits of CDT-specific training, comprising attendance at the annual CDT Summer School.

3. By the end of Year Three a student will accrue an additional 20 credits via completion of two technical modules, each of which comprise 10 credits.

4. In Years One to Four a student will also pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations.

5. In order to proceed to Year Two a student must:

   a) pass not less than 40 credits of CDT-specific training; and
   b) attend and engage with non-credit bearing training and adhere to all standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

6. In order to proceed to Year Three a student must:

   a) pass not less than 50 credits of CDT-specific training; and
   b) attend and engage with non-credit bearing training and adhere to all standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

7. In order to proceed to Year Four a student must:

   a) pass not less than 80 credits of CDT-specific training; and
   b) attend and engage with non-credit bearing training and adhere to all standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

COMR191 SPEECH AND LANGUAGE TECHNOLOGIES (PhD with Integrated PGDip) (Full-Time) (CDT)

For students whose initial registration is in 2019/20.

1. In Year One a student will take

COM61003	F7	Introduction to Responsible SLT Leadership	15
COM61004	F7	Introduction to Collaborative Research Practice for SLT	15

A student will take **45 credits** from the following

COM6012	F7	Scalable Machine Learning	15
COM6115	F7	Text Processing	15
COM6502	F7	Speech Processing	15
COM6509	F7	Machine Learning and Adaptive Intelligence	15
COM6511	F7	Speech Technology	15
COM6513	F7	Natural Language Processing	15

One or more optional modules may be substituted for alternative modules at the discretion of the CDT Director.

2. In Year Two a student will take

COM61005	F7	SLT Research and Leadership Practice 1: Scientific Foundation	15

3. In Year Three a student will take

COM61006	F7	SLT Research and Leadership Practice 2: Core Research	15

4. In Year Four a student will take

COM61007	F7	SLT Research and Leadership Practice 3: Dissemination and Impact	15

5. In Years One to Four a student will also pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations, with the following exceptions:

   a) Confirmation Review, a first attempt of which would normally take place between months 15-18 from a student's initial date of registration with the CDT. The final decision regarding whether a student may be permitted to pass the Confirmation Review must be taken within 24 months of the student's initial registration for full-time students; and
   b) minimum period of registration, which in this case will be 3 years.

6. In order to proceed to Year Two a student must:
   a) pass sixty credits in respect of units listed at 1 above; and
   b) adhere to all standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

7. In order to proceed to Year Three a student must:
   a) pass COM6962: SLT Research and Leadership Practice 1: Scientific Foundation; and
   b) pass Confirmation Review and adhere to all other standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

8. In order to proceed to Year Four a student must:
   a) pass COM6963 SLT Research and Leadership Practice 2: Core Research;
   b) adhere to all standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

9. A student who has been awarded *sixty* credits in respect of units listed at 1 to 4 above and is ineligible for a research award, will be eligible for the award of PGCert in Speech and Language Technologies Leadership (COMT92).

10. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1, 2 and 3 above and is ineligible for a research award, will be eligible for the award of PGDip in Speech and Language Technologies Leadership (COMT91).

11. A student who is not eligible for the award of PhD and who has been awarded *sixty* credits in respect of units listed at 1 above may submit for the award of MPhil with Integrated PGCert in Speech and Language Technologies Leadership (COMR193).

12. A student who is not eligible for the award of PhD and who has been awarded *one hundred and twenty* credits in respect of units listed at 1, 2 and 3 above may submit for the award of MPhil with Integrated PGDip in Speech and Language Technologies Leadership (COMR192).

DTER03 E-FUTURES (PhD) (Full-Time)
DTET10 PROFESSIONAL SKILLS (PGDip) (Part-Time)

1. In Year One a student will take

(a)	FCE6000	F7	Carbon Challenge	5
	FCE6001	F7	Summer School	5
	FCE6003	F7	Introduction to Energy and Professional Skills	60
	FCE610	F7	Personal Effectiveness Skills	10
(b)	FCE6004	F7	Mini Project 1	30
	FCE6005	F7	Mini Project 2	30
	FCE6006	F7	Mini Project 3	30

2. In order to proceed to Year Two a student must pass not less than *one hundred and sixty* credits in respect of units listed at 1(a) and (b) above.

3. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1(a) (above) and does not proceed to Year Two will be eligible for the award of Postgraduate Diploma in E-futures (DTET01).

4. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations.

5. In Years Two to Four a candidate shall take

FCE6007	F7	Skills for Industry	15
FCE6009	F7	Skills in Action	10
FCE607	F7	Career Skills	5
FCE609	F7	Public Engagement Project	10

6. A student will successfully complete the Doctoral Training Centre's upgrading procedures before progressing to the third year of study.

7. A student who has been awarded *one hundred and twenty* credits in respect of 1(a) and 5 above will be awarded the Postgraduate Diploma in Professional Skills (DTET10).

MATR50 ADVANCED METALLIC SYSTEMS (Full-Time) (PhD) (DTC) MATR56 ADVANCED METALLIC SYSTEMS (Full-Time) (EngD) (DTC)

(Joint programme with The University of Manchester)

For students whose registration was in the academic year 2014-15, 2015-16, 2016-17 or 2017-18.

1. In Year One a PhD candidate shall take units listed in 1(a) and (b) below. In Year One an EngD candidate shall take units listed in 1(a) and either (b) or (c) below.

(a)	MAT6292	F7	Structure, Properties and Modelling of Metallic Materials	15
	MAT6511	F7	Phase Transformations in Materials Processing	15
	MATS64571	F7	High Performance Alloys	15
	MATS64601	F7	Materials Performance – Life Cycle Design	15
	MAT6294	F7	Transformative Technologies	10
(b)	MAT6278	F7	Advanced Metals Manufacturing	20
	MAT6299	F7	Mini Research Project and Experimental Skills	30
(c)	MAT6289	F7	Extended Mini Research Project and Experimental Skills	50

*MATS codes denote University of Manchester units

2. In order to proceed to Year Two a PhD candidate must pass *one hundred and twenty* credits in respect of units listed at 1(a) and (b) above. An EngD candidate must pass *one hundred and twenty* credits in respect of units listed at 1(a) and either (b) or (c) above.

3. A candidate who has been awarded one hundred and twenty credits as described at 2 above and does not proceed to Year Two:

   (i) shall be eligible for the award of Postgraduate Diploma in Advanced Metallic Systems (MATT104) *or*

   (ii) may become instead a candidate for the award of MSc Advanced Metallic Systems (MATT121) and in addition to 1 (a) above shall take EITHER 4(a) or 4(b) below:

a) MAT6278 F7 Advanced Metals Manufacturing 20

   MAT6499 F7 Research Project 90

b) MAT6599 F7 Research Project 110

4. A candidate who has been awarded sixty credits in respect of 1(a) above and does not proceed to Year 2 shall be eligible for the award of Postgraduate Certificate in Advanced Metallic Systems (MATT123).

5. In Years Two to Four a candidate shall pursue a programme of research in accordance with the General Regulations for Higher Degrees and shall present a thesis in accordance with those Regulations.

6. In Years One to Four a candidate shall take

a) the Postgraduate Diploma in Personal and Professional Skills (DTMT10).

b) Units selected from the Advanced Metallic Systems CDT Handbook to the value of a minimum of fifteen credits or an equivalent activity to be approved by the Course Director.

MATR50 ADVANCED METALLIC SYSTEMS (Full-Time) (PhD) (DTC)
MATR56 ADVANCED METALLIC SYSTEMS (Full-Time) (EngD) (DTC)

(Joint programme with The University of Manchester)

For students whose registration was in the academic year 2018-19.

1. In Year One all PhD or EngD candidates shall take the units listed in 1(a).

   In Year One all PhD or EngD candidates with a non-Materials discipline Degree shall take the units listed in 1(b).

   In Year One a PhD or an EngD candidate with a Materials Degree shall take the units listed in 1(c) below.

   In Year One a PhD or an EngD candidate with a Materials Degree shall take one of the units listed in 1(d) below.

   Alternative courses to the same credit value may be substituted at the discretion of the CDT Director.

(a) MAT6294 F7 Transformative Technologies 15

MAT6279 F7 Innovative Manufacturing 10

MAT6299 F7 Mini Research Project and Experimental Skills 30

(b)	MAT6292	F7	Structure, Properties and Modelling of Metallic Materials	15
	MAT6511	F7	Phase Transformations in Materials Processing	15
	MATS64402	F7	Advanced Metals Processing	15
	MATS64502	F7	Superalloys and High Performance Materials	15
	MAT333	F7	Metals	10
(c)	AER4447	F7	Industrial Training Programme	20
	MEC6014	F7	Introduction to MATLAB	5
	MAT6292a	F7	Modelling, Heat Transformation and Data Analysis	15
	MATS64662	F7	Research Software Engineering Practice	15
(d)	MATS43102	F7	Advanced Metals Processing	15
	MATS43202	F7	Superalloys and High Performance Materials	15

*MATS codes denote University of Manchester units

2. In order to proceed to Year Two a student will satisfy the requirements of the CDT Academic Progression Committee.
3. A student will successfully complete the Doctoral Training Centre's upgrading procedures before being upgraded to PhD or EngD status.
4. A candidate who has been awarded *one hundred and twenty* credits as described at 1 above and does not proceed to Year Two:

   (i) shall be eligible for the award of Postgraduate Diploma in Advanced Metallic Systems (MATT104) *or*

   (ii) may become instead a candidate for the award of MSc Advanced Metallic Systems (MATT121) and in addition to 1 above shall take:

   MAT6499a F7 Research Project 60
5. A candidate who has been awarded *sixty* credits in respect of 1 above and does not proceed to Year Two shall be eligible for the award of Postgraduate Certificate in Advanced Metallic Systems (MATT123).
6. In Years Two to Four a candidate shall pursue a programme of research in accordance with the General Regulations for Higher Degrees and shall present a thesis in accordance with those Regulations.
7. In Years One to Four a candidate shall take the Postgraduate Diploma in Personal and Professional Skills (DTMT10).

MATR143 GENERATING RENEWABLE ECONOMIC ENERGY FROM NUCLEAR (GREEN) (PhD with Integrated PGDip in Professional Skills) (Full-Time) (CDT)

(Joint programme with the University of Manchester.)

For students whose initial registration is in 2019/20.

1. In Year One a student will take

(a)	MAT6801	F7	Introduction to the Chemistry and Physics of the Nuclear Fuel Cycle	15
	MAT6802	F7	Materials Science in the Nuclear Fuel Cycle	15
	MAT6804	F7	Environmental Radiochemistry and the Science of Radioactive Waste Disposal	15
(b)	MAT6803	F7	Site Visits, Winter School and Skills Training	15
	MAT61006	F7	Research Skills 1: Foundation Independent Research and Professional Skills	45
	MAT61007	F7	Research Skills 2: Core Independent Research and Professional Skills	45
	FCE6100	F7	Professional Behaviour and Ethical Conduct	0

2. In order to proceed to Year Two a student must pass not less than *one hundred and thirty-five* credits in respect of units listed at 1 above.
3. A student who does not proceed to Year Two of the PhD may instead be permitted to become a student for the award of MSc Nuclear Science and Engineering (MATT152). In addition they will take:

   MAT6800 F7 Extended Research Project 30
4. A student who does not proceed to Year Two but has been awarded *one hundred and twenty* credits in respect of units listed at 1 above, including *forty-five* credits from 1a, will be eligible for the award of PGDip Nuclear Science and Engineering (MATT153). A student who has been awarded one *hundred and twenty* credits in respect of units listed at 1 above but with fewer than *forty-five* credits from 1a will be eligible for the award of PGDip Professional Skills (MATT154).
5. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations, with the following exceptions:
   a) Confirmation Review, a first attempt of which would normally take place between months 21-24 from a student's initial date of registration

with the CDT. The final decision regarding whether a student may be permitted to pass the Confirmation Review must be taken within 30 months of the student's initial registration for full-time students; and

b) minimum period of registration, which in this case will be 3 years.

6. In order to proceed to Year Three a student must:
   a) attend and engage with CDT-specific training
   b) Undertake a first attempt of Confirmation Review and adhere to all other standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

7. In order to proceed to Year Four a student must:
   a) attend and engage with CDT-specific training;
   b) Pass Confirmation Review and adhere to all other standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

8. A student who is not eligible for the award of PhD, and who has been awarded *one hundred and twenty* credits in respect of units listed at 1 above may submit for the award of MPhil with Integrated PGDip in Professional Skills (MATR144).

MATR145 ADVANCED METALLIC SYSTEMS (PhD with Integrated PGDip in Personal and Professional Skills) (Full-Time) (CDT)

MATR146 ADVANCED METALLIC SYSTEMS (EngD with Integrated PGDip in Personal and Professional Skills) (Full-Time) (CDT)

(Joint programme with the University of Manchester, University College Dublin and Dublin City University.)

For students whose initial registration is in 2019/20.

MATS codes denote University of Manchester units
COMP codes denote University College Dublin units
MM codes denote Dublin City University units

1a. In Year One a student will take

COMP47670	F7	Data Science in Python	5
MAT61001	F7	Advanced Modelling Techniques Part 1	5
MAT61002	F7	Structure and Mechanical Properties	10
MAT61005	F7	Phase Transformation and Solidification	10

1b.

MAT6299	F7	Mini Research Project	30
MAT6294	F7	Transformative Technologies	10
MAT61004	F7	The Modern Research Environment	10
AER4447	F7	Industrial Training Programme	20

1c. 30 credits from the following

MATS64402	F7	Advanced Metals Processing	15
MATS64502	F7	High Performance Materials	15
MATS64662	F7	Research Software Engineering Practice	15
MM601	F7	CFD with Open Foam	15
MM600	F7	LabVIEW Data Acquisition, Analysis and Control	15
MM555	F7	Manufacturing Process Analysis and Tool Design	15
MM602	F7	Additive Manufacturing	30

2. In Years Two to Four a student will take

FCE608	F7	Doctoral Writing Skills	10
MAT6297	F7	Public Engagement Project	10
FCE6011	F7	SME Consultancy Project	10
MAT6291	F7	Standards, Codes and Specifications	5
MAT6398	F7	Science and Engineering in the Media	5
FCE6009	F7	Skills in Action	10

Alternative courses to the same credit value may be substituted at the discretion of the CDT Director.

3. In order to proceed to Year Two all students must pass no less than one hundred and fifteen credits in respect of units 1 above, and to include MAT6299.
4. A student who has been awarded *sixty* credits in respect of units listed at 1 above and does not proceed to Year Two will be eligible for the award of PGCert in Advanced Metallic Systems (MATT150).
5. A student who has been awarded at least *one hundred and twenty* credits but less than one hundred and eighty credits in respect of units listed at 1 above and is ineligible for a research award, will be eligible for the award of PGDip in Advanced Metallic Systems (MATT149).
6. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations, with the following exceptions:
   a) Confirmation Review, a first attempt of which would normally take place between months 18-21 from a student's initial date of registration with the CDT. The final decision regarding whether a student may be permitted to pass the Confirmation Review must be taken within 27 months of the student's initial registration for full-time students; and
   b) minimum period of registration, which in this case will be 3 years for Full Time students.
7. In order to proceed to Year Three a student must:
   a) pass not less than twenty credits in respect of units listed at 2 above.
   b) undertake a first attempt of Confirmation Review and adhere to all other standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.
8. In order to proceed to Year Four a student must:
   a) attend and engage with CDT-specific training;
   b) pass Confirmation Review and adhere to all standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.
9. A student who has been awarded one hundred and eighty credits in respect of units listed at 1 and 2 above, who exits the programme early and and is ineligible to submit for a research award, will be eligible for the award of MSc in Advanced Metallic Systems (MATT148).
10. A Sheffield PhD student must be awarded one hundred and twenty credits in respect of units listed in 1b and 2 to be eligible for the final award of PhD with Integrated PGDip in Personal and Professional Skills (MATR145). A student who is awarded less than one hundred and twenty credits will be eligible for the final award of PhD Advanced Metallic Systems (MATR148).

11. A Sheffield EngD student must be awarded one hundred and twenty credits in respect of units listed in 1b and 2 above to be eligible for the final award of EngD with Integrated PGDip in Personal and Professional Skills (MATR146). A student who is awarded less than one hundred and twenty credits will be eligible for the final award of EngD Advanced Metallic Systems (MATR149).
12. A student who is not eligible for the award of PhD or EngD, and who has been awarded one hundred and twenty credits in respect of units listed at 1b and 2 above may submit for the award of MPhil with Integrated PGDip in Advanced Metallic Systems (MATR150).

DTNT03 NUCLEAR FISSION (PhD) (Full-Time)

(Joint programme with the University of Manchester)

1. In Year One a student will take

MAT6801	F7	Introduction to the Chemistry and Physics of the Nuclear Fuel Cycle	15
MAT6802	F7	Materials Science in the Nuclear Fuel Cycle	15
MAT6803	F7	Site Visits, Winter School and Skills Training	15
MAT6804	F7	Environmental Radiochemistry and the Science of Radioactive Waste Disposal	15
MAT6805	F7	DTC Project Rotation 1	45
MAT6806	F7	DTC Project Rotation 2	45

2. In order to proceed to Year Two a student must pass not less than *one hundred and thirty-five* credits in respect of units listed at 1 above.
3. A student who has been awarded not less than *one hundred and thirty-five* credits in respect of units listed at 1 above and does not proceed to Year Two may become instead a student for the award of MSc(Res) Nuclear Fission (DTNT02) and in addition will take

MAT6800	F7	Extended Research Project	30

4. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1 above and does not proceed to Year Two will be eligible for the award of Postgraduate Diploma in Nuclear Fission (DTNT01).
5. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations.
6. A student will not be permitted to complete either a Postgraduate Diploma in Professional Management and Leadership Skills or *forty-five* credits of the Doctoral Development Programme.

CPER05 ENERGY STORAGE AND ITS APPLICATIONS (PhD) (Full-Time)
CIVR100 ENERGY STORAGE AND ITS APPLICATIONS (PhD) (Full-Time)
EEER100 ENERGY STORAGE AND ITS APPLICATIONS (PhD) (Full-Time)
MATR100 ENERGY STORAGE AND ITS APPLICATIONS (PhD) (Full-Time)

(Joint programme with the University of Southampton)

For students whose registration was in the academic year 2014-15

1. In Year One a student will take

CPE604	F7	An Introduction to Energy and the Environment	15
CPE610	F7	Energy Storage CDT Mini-Project	15
CPE612	F7	Applied Energy Storage	30
CPE650	F7	Research project (Sheffield)	60
FEEG6019	F7	Energy Storage Applications	30
PSY6081	F7	The Social Science of Energy Storage	15
SESG6041	F7	Introduction to Energy Technologies, Environment and Sustainability	15

2. Delivered during the second, third and fourth year

CPE613	F7	Skills in Action	15
CPE614		Public Engagement	5
CPE615		Researcher Development	30
FCE6007		Skills for Industry	15
FCE610		Personal Effectiveness Skills	10
FEEG6018		Personal & Professional Skills	15
MEC6314		Innovation Management	10
MEC6414		Technology Strategy and Business Planning	10
MEC6428		Professional Responsibility of Engineers	10

3. In order to proceed to Year Two a student must pass not less than *one hundred and fifty* credits in respect of units listed at 1 above.
4. A student who has been awarded *one hundred and eighty* credits in respect of units listed at 1 above will be eligible for the MSc in Energy Storage and its Applications (CPET35).
5. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1 above will be eligible for the Postgraduate Diploma in Energy Storage and its applications (CPET36).
6. In the event of failure in CPE650 Research project (Sheffield) at the first attempt any resubmission is subject to the approval of the Board of Examiners.
7. A student who has been awarded one hundred and twenty credits in respect of units listed at 3(a) and 3(b) above will be eligible for the Postgraduate Diploma in Personal and Professional Skills.
8. A student who has been awarded sixty credits in respect of units listed at 3(a) and 3(b) above will be eligible for the Postgraduate Certificate in Personal and Professional Skills.
9. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations.

For students whose registration was in the academic year 2015-16, 2016-17 or 2017-18

1. In Year One a student will take

CPE604	F7	Global Energy Systems	15

CPE610	F7	Energy Storage CDT Mini-Project	15
CPE612	F7	Applied Energy Storage	30
CPE650	F7	Research project (Sheffield)	60
FEEG6018	F7	Professional and Research Skills	15
FEEG6019	F7	Energy Storage Applications	30
SESG6041	F7	Introduction to Energy Technologies, Environment and Sustainability	15

2. Delivered during the second, third and fourth year

CPE613	F7	Skills in Action	15
CPE614		Public Engagement	5
CPE615		Researcher Development	30
FCE6007		Skills for Industry	15
FCE610		Personal Effectiveness Skills	10
MEC6314		Innovation Management	10
MEC6414		Technology Strategy and Business Planning	10
MEC6428		Professional Responsibility of Engineers	10
PSY6081	F7	Social Science of Energy Storage	15

3. In order to proceed to Year Two a student must pass not less than *one hundred and fifty* credits in respect of units listed at 1 above.

4. A student who has been awarded *one hundred and eighty* credits in respect of units listed at 1 above will be eligible for the MSc in Energy Storage and its Applications (CPET35).

5. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1 above will be eligible for the Postgraduate Diploma in Energy Storage and its applications (CPET36).

6. In the event of failure in CPE650 Research project (Sheffield) at the first attempt any resubmission is subject to the approval of the Board of Examiners.

7. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 2(a) and 2(b) above will be eligible for the Postgraduate Diploma in Personal and Professional Skills (CPER38).

8. A student who has been awarded *sixty* credits in respect of units listed at 2(a) and 2(b) above will be eligible for the Postgraduate Certificate in Personal and Professional Skills.

9. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations.

For students whose registration is in the academic year 2018-19

1. In Year One a student will take

CPE604	F7	Global Energy Systems	15
CPE610	F7	Energy Storage CDT Mini-Project	15
CPE612	F7	Fundamentals of Energy Storage	30
CPE650	F7	Energy Storage CDT Summer Research Project (Sheffield)	60
FEEG6019	F7	Energy Storage Applications	30
PSY6018	F7	The Social Science of Energy Storage	15
SESG6041	F7	Introduction to Energy Technologies, Environment and Sustainability	15

*SESG and FEEG codes denote University of Southampton units.

2. In Years Two to Four a student can take

(a)	CPE613	F7	Skills in Action	15
	FCE610		Personal Effectiveness Skills	10
	FEEG6018		Personal & Professional Skills	15
	MEC6314		Innovation Management	10
	MEC6414		Technology Strategy and Business Planning	10
	MEC6428		Professional Responsibility of Engineers	10
	FCE607		Career Skills	5
(b)	A student can take either			
	CPE614		Public Engagement	5
	or			
	CPE634		Public Engagement	15
(c)	A student can take either			
	CPE635		CDT Researcher Development	15
	or			
	CPE615		CDT Researcher Development	30

3. In order to proceed to Year Two a student must pass not less than *one hundred and fifty* credits in respect of units listed at 1 above.

4. A student who has been awarded *one hundred and eighty* credits in respect of units listed at 1 above will be eligible for the MSc in Energy Storage and its Applications (CPET35).

5. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1 above will be eligible for the Postgraduate Diploma in Energy Storage and its applications (CPET36).

6. In the event of failure in CPE650 Research project (Sheffield) at the first attempt any resubmission is subject to the approval of the Board of Examiners.

7. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 2(a) and 2(b) above will be eligible for the Postgraduate Diploma in Personal and Professional Skills (CPER38).

8. A student who has been awarded *sixty* credits in respect of units listed at 2(a) and 2(b) above will be eligible for the Postgraduate Certificate in Personal and Professional Skills (CPER37).

9. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations.

MECR07 INTEGRATED TRIBOLOGY (PhD) (Full-Time)

(Joint programme with the University of Leeds)

1. In Year One a student registered at The University of Sheffield will take

(a)	MEC6907	F7	Tribology Masterclass	0
	MEC6908	F7	Professional Skills	30
	MEC6905	F7	Mini Project - Group	30
	MEC6906	F7	Mini Project – Individual	30
(b)	plus *twenty* credits from (i)			
(i)	MAT3430	F6	Materials for Biological Devices	10
	MEC6403	F7	Reciprocating Engines	10
	MEC6429	F7	Mechanical Engineering of Railways	10
	MEC6440	F7	Advanced Finite Element Modelling	10
	plus *ten* credits from (ii)			
(ii)	MAT373	F6	Surface degradation and protection	10
	MAT6336	F7	Surfaces and Coatings	10

2. At (b) above, students may substitute other units with permission of the Programme Manager.

3. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1(a) and (b) above and who does not complete the requirements of the Degree of PhD will be eligible for the Postgraduate Diploma in Integrated Tribology (MEC.

4. Before proceeding to Year Two a student will complete MEC6908 Professional Skills.

5. In order to proceed to Year Two a student will satisfy the requirements of the CDT Academic Progression Committee.

6. A student will successfully complete the Doctoral Training Centre's upgrading procedures before being upgraded to PhD status.

7. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations.

MECR80 INDUSTRIAL DOCTORATE IN MACHINING SCIENCE (Full Time) (EngD)
ACSR80 INDUSTRIAL DOCTORATE IN MACHINING SCIENCE (Full Time) (EngD)
MATR80 INDUSTRIAL DOCTORATE IN MACHINING SCIENCE (Full Time) (EngD)
CPERXX INDUSTRIAL DOCTORATE IN MACHINING SCIENCE (Full Time) (EngD)
MECR09 MACHINING SCIENCE (Full Time) (PhD)
MECR91 MACHINING SCIENCE (Full Time) (PhD)
MECT07 DIPLOMA IN MACHINING SCIENCE (PG Dip) (Part-Time)

1. In Year One a student will take

(a)	MAT61004	F7	Modern Research Environment	10
	MEC81001	F7	IDC Personal and Professional Skills Development	10
	MGT6256	F7	Managing Complex Projects and Risk Management	20
(b)	units to the value of *thirty* credits from the following			
	ACS329	F6	Robotics	15
	MAT6333	F7	Aerospace Metals	15
	MAT6444	F7	Advanced Materials Manufacturing Part 1	15
	MEC6405	F7	Experimental Stress Analysis	15
	MEC6411	F7	Tribology of Machine Elements	15
	MEC6415	F7	Condition Monitoring	15
	MEC6440	F7	Advanced Finite Element Modelling	15
	MEC6444	F7	Additive Manufacturing – Principles and Applications 1	15
	MEC6445	F7	Additive Manufacturing – Principles and Applications 2	15
	MEC6452	F7	Advanced Topics in Machining	15
(c)	MEC6901	F7	IDC Machining Science Mini-Project 1	30
	MEC6902	F7	IDC Machining Science Mini-Project 2	30
	MEC6903	F7	IDC Machining Science Mini-Project 3	30

Other units may be substituted for those listed in 1(b) at the discretion of the Academic Director of the IDC.

2. In order to proceed to Year Two a student must pass *one hundred and sixty* credits in respect of units listed at 1(a), (b), and (c) above.

3. A student who has been awarded *seventy* credits in respect of 1(a), (b), and (c) above and does not proceed to Year Two, may instead become a student for the award of Postgraduate Diploma in Machining Science (MECT07 PG Dip) and in addition to 1(a), (b) and (c) above will take

MEC6904	F7	IDC Machining Science Research Project	50

4. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees and will present a thesis in accordance with those Regulations.
5. In Years Two to Four a student will undertake further academic and professional skills related modules and activities appropriate to their studies, and also present at the AMRC Technical Fellows or IDC Student Conference.
6. A student will successfully complete the Industrial Doctorate Centre's confirmation procedures before progressing to the third year of study.

MECR92 RESILIENT DECARBONISED FUEL ENERGY SYSTEMS (Full Time or Part Time) (PhD) (CDT)

MECR93 RESILIENT DECARBONISED FUEL ENERGY SYSTEMS (Full Time or Part Time) (EngD) (CDT)

(Joint Programme with The University of Cranfield)

For students whose initial registration is in 2019/20.

1. In Year One a student will take

(a)	H84PGC	F7	Power Generation and Carbon Capture and Storage (Nottingham)	10
	L34118	F7	Energy Systems and Policy (Nottingham/Cardiff)	20
	H141MP	F7	Industrial Mini Project (Uni of registration)	10
	MPP163	F7	Industrial Case Studies (Nottingham)	10
	H84RP3	F7	Research Project Portfolio: Part 1 (Uni of registration)	10
	H84CPE	F7	Communication & Public Engagement Skills for Energy Researchers (Nottingham)	10
	F84CSS	F7	Winter School (rotating)	0
	H14RPS	F7	Research and Professional Skills (Nottingham)	10
	H84LCP	F7	Low Carbon Processes (Nottingham)	10

(b) units to the value of *thirty* credits selected from available technical or skills-based Masters modules delivered by CDT partner institutions.

2. In Year Two a student will take

ENT721	F7	Risk and Hazard Management in the Energy Sector	10

and engage with CDT training and development activities, as determined by the CDT management board.

3. A student who has been awarded *sixty* credits in respect of units listed at 1 and 2 above and who is ineligible for a research award, will be eligible for the award of Postgraduate Certificate in Decarbonised Fuel Energy Systems (MECT62).
4. A student who has been awarded *one hundred and twenty* credits in respect of units listed at 1 and 2 above and who is ineligible for a research award, will be eligible for the award of Postgraduate Diploma in Decarbonised Fuel Energy Systems (MECT61).
5. A student who does not proceed to Year 3 may instead be

permitted to become a student for the award of MSc in Decarbonised Fuel Energy Systems (MECT60) and in addition will take

F7 Extended Research Portfolio 50

6. In Years Two to Four a student will pursue a programme of research in accordance with the General Regulations for Higher Degrees by Research, and will present a thesis in accordance with those Regulations, with the following exceptions:
   a) Confirmation Review, a first attempt of which would normally take place between months 15-18 from a student's initial date of registration with the CDT. The final decision regarding whether a student may be permitted to pass the Confirmation Review must be taken within 24 months of the student's initial registration for full-time students; and
   b) minimum period of registration, which in this case will be 3 years for a Full Time student and 6 years for a Part Time student.

7. In order to proceed to Year Three a student must undertake a first attempt of Confirmation Review and adhere to all other standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

8. In order to proceed to Year Four a student must pass Confirmation Review and adhere to all standard Sheffield PGR progression rules, as per the Regulations for Higher Degrees by Research.

GENERAL REGULATIONS FOR PHD WITH INTEGRATED STUDIES IN THE FACULTY OF ENGINEERING

1. The following programmes of study and research are specified for the purposes of Regulation 3 within the Regulations for the Degree of PhD with Integrated Studies, as outlined in the General Regulations for Higher Degrees by Research:

   ACST90 ADVANCED CONTROL AND SYSTEMS ENGINEERING (MSc)

   (For initial registration of a candidate for the Degree of PhD with Integrated Studies in Control and Systems Engineering only)

   CIVT90 ENVIRONMENTAL MANAGEMENT OF URBAN LAND AND WATER (MSc(Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   CIVT91 EARTHQUAKE AND CIVIL ENGINEERING DYNAMICS (MSc)

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   CIVT95 CONCRETE ENGINEERING (MSc)

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   CIVT96 STEEL CONSTRUCTION (MSc)

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   CIVT97 STRUCTURAL ENGINEERING (MSc)

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   COMT90 ADVANCED COMPUTER SCIENCE (MSc)

   (For initial registration of a student of the Degree of PhD with Integrated Studies in Computer Science only)

   CPET90 ENVIRONMENTAL AND ENERGY ENGINEERING (MSc(Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   MATT91 ADVANCED METALLURGY (MMet)

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   MATT92 AEROSPACE MATERIALS (MSc (Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies in Advanced Materials Science only)

   MATT93 CERAMIC SCIENCE AND ENGINEERING (MSc (Eng)

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   MATT94 POLYMER AND POLYMER COMPOSITE SCIENCE AND ENGINEERING (MSc (Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies only)

   MATT95 WASTE IMMOBILISATION (MSc (Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies in Waste Immobilisation only)

   MATT144 ADVANCED MATERIALS MANUFACTURING (MSc (Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies in Advanced Materials Manufacturing only)

   MATT145 MATERIALS SCIENCE AND ENGINEERING (MSc (Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies in Materials Science and Engineering only)

   MATT146 BIOMATERIALS AND REGENERATIVE MEDICINE (MSc (Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies in Biomaterials and Regenerative Medicine only)

   MATT147 NANOMATERIALS AND MATERIALS SCIENCE (MSc (Eng))

   (For initial registration of a student for the Degree of PhD with Integrated Studies in Nanomaterials and Materials Science only)