



Proposal for New Degree Programmes

Stage 2

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THE UNIVERSITY OF EDINBURGH

PROGRAMME SPECIFICATION FOR [*INSERT NAME OF PROGRAMME OF STUDY, e.g. M.A. Honours in Ancient History or M.Sc. in Public Health*]¹

PROGRAMME SPECIFICATION

Grey text has been added to provide guidance. Please delete as you add your own text, remove italics, and change the font colour to black.

OVERVIEW

Awarding Institution	University of Edinburgh
Teaching Institution	University of Edinburgh
Programme accredited by	N/A
Final Award	PhD / MPhil / MSc®
Programme Title	PhD EPCC: High Performance Computing, Computational & Data Science, Software Engineering
UCAS Code	N/A
Relevant QAA Subject Benchmarking Group(s)	Computing
Postholder with overall responsibility for QA	EPCC Director EPCC Senior Research Fellow EPCC Postgraduate Programmes Manager

¹ The information contained in this Programme Specification should be used as a guide to the content of a degree programme and should not be interpreted as a contract.

Date of Production/revision	February 2020
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EXTERNAL SUMMARY

Edinburgh Parallel Computing Centre (EPCC) offers the opportunity to study for a PhD in areas related to high performance computing, software sustainability and data intensive computing. Our computing research covers: software for future HPC systems, modelling and simulation, performance characterisation and benchmarking, and developing national and international HPC services. We are working on several Big Data research projects, ranging from earthquake prediction and astronomical data analysis to the development of international data infrastructure for managing today's immense growth in data generation.

Our software specialists have an impressive portfolio of projects, including many industrial applications. We work at the forefront of the field, for example through our leadership of the UK's Software Sustainability Institute, ensuring that today's new software continues to be improved and supported in the future.

Founded in 1990, EPCC is one of the leading supercomputing centres in Europe and a major provider of training in high performance computing. EPCC's expertise includes advanced research, technology transfer, commercial consultancy and the provision of supercomputer services to academia and business.

EPCC hosts an exceptional collection of high-performance and novel computing facilities including ARCHER2, the UK's Tier 1 national HPC service for academic research, Cirrus, a national Tier 2 HPC service, Fulham, a Catalyst UK HPE Apollo system, the UK Research Data Facility, and soon the Edinburgh International Data Facility.

EPCC has a team of experienced researchers with a wealth of expertise in the latest technologies and a history of collaboration with both major industrial partners (such as Rolls Royce through the ASiMoV project with EPSRC) and international collaborations such as PRACE.

EDUCATIONAL AIMS OF THE PROGRAMME

Cutting-edge academic research in the interdisciplinary areas of High Performance Computing, Computational Science, Data Science, Software Engineering.

PROGRAMME OUTCOMES

Knowledge and Understanding

Precise graduate attributes may vary widely depending on the precise PhD thesis undertaken. In general, however graduates will be expected to be able to:

Graduate Attributes: Skills and abilities in Research and Enquiry

- Contribute to academic and industrial research activities in the area of their chosen study
- Produce novel and innovative solutions to problems

Graduate Attributes: Skills and abilities in Personal and Intellectual Autonomy	<ul style="list-style-type: none"> • Work both independently and collaboratively with others across traditional disciplinary boundaries • Self-motivate and organise to produce high quality work to a schedule. • Demonstrate an exceptionally high standard of technical and practical skills • Effectively synthesise and communicate complex topics to a wide audience of both subject-area experts and lay persons.
Graduate Attributes: Skills and abilities in Communication	
Graduate Attributes: Skills and abilities in Personal Effectiveness	
Technical/practical skills	

PROGRAMME STRUCTURE AND FEATURES

The programme will follow the standard PhD structure with annual reviews confirming progression.

Entry requirements:

These will vary on a per-project basis, but at the minimum an UK 2:1 honours degree in a Computer or Computational Science or Engineering related subject and significant programming experience will be required. Many projects may have higher requirements (e.g. first class honours degree or MSc).

Progression requirements: progression to MPhil/PhD requires successfully passing standard PGR reviews.

Exit awards: PhD, MPhil, MSc(R)

Mode of study: Full-time/Part-time

Language of study: English

TEACHING AND LEARNING WORKLOAD

<i>Please indicate the typical workload for a student on this programme for each year of study</i>			
Start Year	Time in scheduled teaching (%)	Time in independent study (%)	Time on placement (%)
Year 1	0-10	90-100	0
Year 2	0-10	90-100	
Year 3	0-5	95-100	
			<i>Add rows as necessary</i>
ASSESSMENT METHODS AND STRATEGIES			
Standard PhD Review cycle and submission timeframes.			
CAREER OPPORTUNITIES			
<p>Recent EPCC-supervised (either directly or through the PPar CDT) PhD students have received offers of employment from a diverse range of employers including EPCC, Sandia National Laboratory, Leonardo, Appentra, Women in HPC, Renault F1. Specific opportunities will likely be highly dependent on a student's precise thesis topic, however this is an area in major demand with opportunities from both academia and industry.</p> <p>Graduates from EPCC's on-campus MSc programmes are in high demand from a wide range of companies ranging from multinationals to SMEs both within the UK, Europe, and internationally as well as a strong demand from within academia both as researchers within HPC, computational science fields, data science, and professionally for HPC services and centres underpinning research. Recent destinations include: ARM, Intel, Amazon, MathWorks, NCR, Avaloq, Global Surface Intelligence, Boston Ltd, ECMWF, Leonardo, STFC, ICHEC, EPCC itself and PhD opportunities (including 8 current UoE PhD candidates).</p>			
OTHER ITEMS			
<i>This section can include other distinctive features of the programme, e.g.</i>			

- Many opportunities for internships with industry/international partners have been experienced by similar students already including Leonardo, US national laboratories, and Renault F1

ABOUT THE PROGRAMME

ADDITIONAL REQUIREMENTS

PRSB Accreditations (where relevant)	<i>Please note accreditations awarded or planned</i>
Admissions requirements Before completing this section please contact a member of the Recruitment and Admissions team for further guidance.	Will vary per place, but see above.
To be completed by R & A Team	<i>Please select to confirm that a member of the R & A section have consulted on the Admissions requirements.</i> <input checked="" type="checkbox"/>
Work experience/work based learning opportunities	Students may apply for an interruption of studies to undertake internships.

CONSULTATION

Student body	Discussed with existing PhD students who agree such a PhD code would more accurately reflect where they sit organisationally and in terms of frontline support.
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External Review/Critical Friend	
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ADDITIONAL DOCUMENTS	
Memorandum of Agreement (if applicable)	
Award letter (if applicable)	
DPT (please use your current template)	

APPROVAL

Programme Title:	PhD EPCC: High Performance Computing, Computational & Data Science, Software Engineering
Programme Proposer:	Prof Mark Parsons, Dr Mark Bull, Mr Ben Morse

STAGE 1: SCHOOL BOARD OF STUDIES REVIEW AND APPROVAL

Confirmation of approval of the proposal at the School Board of Studies should be entered below.

Date of BoS: February 2020
Convener Name: Prof. Stuart Anderson
Comment and Approval (BoS Minute): <i>Please provide either a link to the minutes of the Board or a copy of the relevant text from the minutes.</i>

STAGE 2: HEAD OF SCHOOL REVIEW AND APPROVAL

Head of School: <i>Please print name</i>
Comment and Approval:
Signature:

STAGE 3: COLLEGE CURRICULUM APPROVAL BOARD REVIEW AND OUTCOME

Date of CCAB:

Convener Name:

Stage 2 Outcome (please select as appropriate)

Proposal approved ➡ Proceed to *New Programme Request & DPT creation*

Proposal approved with conditions

Proposal rejected with recommendations

Proposal rejected

Comment:

DOCUMENT CHECKLIST

Document	Completed
DPT	<input checked="" type="checkbox"/>
Memorandum of Agreement (if applicable)	<input type="checkbox"/>
Assessment Matrix	<input checked="" type="checkbox"/>
Award letter (if applicable)	<input type="checkbox"/>