THE UNIVERSITY *of* EDINBURGH
College of Science & Engineering

Proposal for New Degree Programme

Stage 1

Contents

OVERVIEW OF PROGRAMME

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ABOUT THE PROGRAMME		
Title of programme	MSc by Research in Biomedical Artificial Intelligence	
Intended Award	MSc	
Alternative awards	*(Insert name e.g. PG Dip, PG Cert)*	
School	School of Informatics	
Programme Director	Prof Guido Sanguinetti	
Programme start dates	Sept 2019	
SCQF level of highest award		
Total credit value of programme *(for highest award)*	180	
Partner institution(s) if any		
Mode of delivery *(Please ✓those which apply to this programme)*	On campus	Y
	Online	N
	Blended learning	N
	FT	Y

	PT	N
	Intermittent	N
Expected length of programme	FT	**12 months**
	PT	
	Intermittent	

Description of the programme and its structure (maximum 150 words)

Delivering healthcare that meets the needs of a growing and ageing population is a defining scientific and societal challenge for the twenty-first century. Solutions to this challenge are contingent on our ability to effectively interrogate and model the increasingly larger data sets that biomedical sciences are producing. Artificial intelligence (AI) techniques hold immense promise in this field, but the unique scientific, societal and ethical/ legal dimensions of the biomedical field pose considerable research challenges to the AI community. The proposed MSc by Research programme in Biomedical AI lays the foundations for a research training PhD within the UKRI Centre for Doctoral Studies in Biomedical AI at Edinburgh.

The programme delivers interdisciplinary training to CDT first year students by blending taught components with individual and group projects. Students will take 60 credits of new and existing courses (see proposed DPT of the programme) covering the computational and biomedical foundations, as well as providing a background in the societal/ ethical aspects of research through a newly developed module on Responsible Research and Innovation. During the second semester, students will work in small groups (2-3 students) on a 40 credits interdisciplinary research project, and will then proceed to an 80 credits individual project which will be assessed through a traditional dissertation.

As part of the CDT bid, we have assembled a large faculty covering both the informatics aspects of Biomedical AI, and the applicative and societal dimensions of research. Together, this body of nearly 80 researchers will provide ample capacity to supervise and assess the project components of the programme.

Career, employability and opportunities for continuing professional development.

This programme forms the preliminary year for students admitted to the UKRI CDT in Biomedical Artificial Intelligence programme, therefore a three year PhD will be the natural destination of all students. Students choosing to leave the CDT after the master year would nevertheless face very favourable career opportunities. Biomedical AI is expected to be a sector of particular growth in the near to medium term, as highlighted in several governmental reports (Industrial Strategy, Life Sciences Industrial Strategy, etc) as well as major industrial players (Association of British Pharma Industry, Glaxo-Smith-Klein strategic report 2018). According to the EU patent office, the Med-Tech sector filed the largest number of new patents in 2017 than any sector. Anecdotal evidence from colleagues working in the field suggests a buoyant job market in both public and private sector with a lively start-up ecosystem. All of these facts point to a high employability for any graduates of the programme, with excellent subsequent career options.

BUSINESS CASE

This section should be used to outline the business case for the proposed programme. Before completing this section market research should have been undertaken.

STRATEGIC PLANNING, RECRUITMENT & COMPETITOR ANALYSIS	
Programme Title	MSc (Res) in Biomedical Artificial Intelligence
Programme Proposer	Guido Sanguinetti
Strategic Planning	The programme will constitute the first year in a 1+3 PhD programme within the UKRI CDT in Biomedical Artificial Intelligence. The CDT has considerable strategic importance for the School and the University, as it will underpin collaborative activity across CSE, CMVM and CAHSS in a sector of considerable relevance to the scientific mission of the University, and likely to be a major focus of growth in research and industrial interest over the coming decades.

Recruitment *Please provide a detailed commentary on your marketing and recruitment strategy.*	The recruitment will be carried out for the whole CDT programme using the template established within the School's existing CDTs. Applicants will be reviewed and interviewed by academics. In terms of advertising, we will publicise the CDT programme through specialised press/ websites, as well as resorting to our existing extensive network of academic colleagues. The target group of students will be graduates of physical sciences backgrounds (not necessarily computer science, but also mathematics, physics and engineering). The programme will not affect any existing programmes within SoI. There is a partial overlap in target students with the MRC DTP in precision medicine (jointly owned by MVM and U. Glasgow), however the aims of the programmes are sufficiently distinct so that we do not envisage any negative effects on the recruitment to that programme.		
Competitor Analysis *A competitor analysis report provides a better understanding of the marketplace and competition, from the going rate for tuition fees to the unique selling points and marketing strategies of competitor programmes.*	The proposed programme is part of an ongoing CDT competition. The marketplace will thus depend on its outcome. Successful outline proposals in this area in the first round were made by Glasgow, Manchester and (to a lesser extent) Oxford and Imperial. All programmes will offer fully funded 4-year PhD or 1+3 MSc+PhD placements, so that fee structures are not relevant here.		
Competitor Fees *Provide the fee structure (in British pounds) of three competitors, preferably those mentioned in the competitor analysis. These may be UK or International competitors.*	Institution	Programme	Fees
			Home	International

FEES AND COSTING
Programme fees	Home-Scotland / EU	

Fees are expressed per academic year in British pounds. For PGT programmes, a Programme Costing Template will also be required for Fee Strategy Group.	Home-RUK	
	Overseas	
Fees for each new PGT programme are sent by College to the Fee Strategy Group (FSG) for review and approval. The FSG has developed a Programme Costing Template to give FSG insight into the anticipated profitability of a programme and where it sits within its market. The Fees Costings template, and guidance from FSG on filling out the template is included in the spreadsheet attached to the right.		FSGProgrammeCost ingTemplateFinalHS

Additional Programme Costs (PGR only)

Additional costs to the student should be noted and justified in the table below. These should consist of items that are over and above the basic provision that should be available to all students and should reflect the special additional costs associated with the specific programme of study. Individual items over £200 should be noted on a separate row.

Item	Cost	% of Total
Add rows as necessary		
Total:		100%

ANTICIPATED AND PROJECTED ENROLMENTS			
What are the anticipated and projected enrolments over the next three years?			
	Year 1	Year 2	Year 3
Home	10	10	10
International	2	2	2

Supporting Research What market research has been planned or completed to support the predicted student numbers?	The numbers are fixed through the CDT bidding proposal; they are comprised of 8 UKRI funded places, plus 4 additional places which we estimate will at least partially be covered by industrial sponsors.

PLANNING AND RESOURCES	
New Courses	We are planning a new 10 credits course in Issues in Clinical data modelling, a new 40 credits group project course, as well as a new 80 credits MSc project course. The Issues in Clinical data modelling course will be coordinated by the programme director and delivered as external guest lectures/ visits to clinical labs (relevant clinicians have already given their availability as part of the CDT bid (relevant contact Prof TimWalsh, Director of R&D, NHS Lothian). The Programme director will also coordinate the group project and MSc project course assignments with support from CDT administrative staff (to be recruited if the bid is successful). These courses are being proposed at the same time as the programme and will be approved in parallel. Additionally, a tailored 20 credits programme on Responsible research and innovation for Biomedical AI is being developed and proposed by the School of Social and Political Sciences (the approval process will go through the SSPS route). All new courses will not require additional teaching from SoI academics.
Facilities and Equipment	These were approved at the UKRI proposal submission stage
Staff	The programme is supported by a large faculty of potential supervisors
Resource Sharing	Students on the programme may choose existing provision from our taught MSc courses, both in SoI, in SBS and in SSPS. Additionally, the new Responsible Research and Innovation course developed in SSPS might be opened to other programmes within UoE with a strong focus on AI.

COLLABORATIVE PROGRAMMES	

Additional information is required for new programmes that are collaborations with external institutions or organisations which will result in a joint award and/or where taught components are shared. International partnerships must have a Memorandum of Understanding (MoU) in place before the programme can be approved by College.

Should the proposal be progressed to Stage 2 a draft Memorandum of Agreement (MoA) will need to accompany the submission.

Separate guidance is available for the development of collaborative programmes.

http://www.ed.ac.uk/governance-strategic-planning/collaborative-activity/guidance-templates

- *Please provide brief details of partnership below, including confirmation of which institution will be the Administering University, the fee structure and confirmation of any external funding (if available).*

CONSULTATION AND APPROVAL

Programme Title:	MSc by Research in Biomedical Artificial Intelligence
Programme Proposer:	Guido Sanguinetti

STAGE 1: CONSULTATION

Please confirm consultation with relevant stakeholders has taken place.

Stakeholder	Yes	NA
School Director of Professional Services	☒	☐
School Academic Administration Staff	☒	☐
Information Services (including Academic Support Librarians)	☐	☒
Student Body (SSLC/Student representatives)	☐	☒
Partner School Staff (E.G. Joint Programmes/shared courses etc)	☒	☐
Employers	☒	☐
Industry and Professional Bodies	☒	☐
External Consultation	☐	☒
Please note any other consultation		

Please provide a brief comment on the consultation process

The UKRI bid was widely consulted and jointly written with academics from other schools/ colleges. Additionally, a co-creation workshop with industrial and NHS representatives was held in June 2018 to inform the writing of the proposal from the future employers' perspective.

Please provide a brief comment on the consultation process with External consultants

STAGE 2: 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:
Convener Name:
Comment and Approval (BoS Minute):   *Please provide either a link to the minutes of the Board or a copy of the relevant text from the minutes.*

STAGE 3: HEAD OF SCHOOL REVIEW AND APPROVAL

Head of School: *Please print name*
Comment and Approval:
Signature:

STAGE 4: COLLEGE CURRICULUM APPROVAL BOARD REVIEW AND OUTCOME

Date of CCAB:	
Convener Name:	
Stage 1 Outcome (please select as appropriate)	
Permission to proceed to Stage 2	☐
Permission to proceed to Stage 2 with conditions	☐

Proposal rejected with recommendations	☐
Proposal rejected	☐
Comment:	