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	Business Informatics - Advanced Technology for Financial Computing	
Intended Award	MSc	
Alternative awards	*(Insert name e.g. PG Dip, PG Cert)*	
School	School of Informatics	
Programme Director		
Programme start dates	2020-2021	
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	N
	Intermittent	N
Description of the programme and its structure (maximum 150 words)		

The MSc in Business Informatics - Advanced Technology for Financial Computing is a cross-disciplinary qualification targeted at high-potential employees working in complex, innovative-intensive, technology-driven organisations. The programme is based on full-time study and has strong links to existing centres of research excellence within two world-class academic Schools- School of Informatics and Edinburgh Business School.

The MSc in Business Informatics - Advanced Technology for Financial Computing is a response to the growing need for highly specialised training in the area of technologies for digital finance. Training at the postgraduate level can be an extremely effective catalyst given the lack of systematised technology and engineering practices in information technology and the rapidly evolving nature of digital financial services. The programme will aim to create a generation of leaders in technology and finance related sectors (both in academia and industry).

The School of Informatics conducts research on wide aspects of the core technology and applications related to artificial intelligence, data science, machine learning, natural language processing, cyber security, network systems and foundations of computer science. While the Business School conducts research related to digital finance, information systems, business analytics, decision science, operations research etc. Both schools provide solid research and teaching environments to support the facilitation of this proposed new MSc. The proposed specialism courses cover topics: blockchain, machine learning, high frequency trading, financial engineering, text technology, risk management in banks, optimisation, statistical programming etc. The teaching team of the new MSc is lined up with world class researchers and educators from both School of Informatics and the Business School

The curriculum is designed in such a way, that each student will receive a tailor-made training regime with a number of optional modules that is suitable for students' focal area within related to financial technology, but will also develop a joint perspective from the business aspect as well as the informatics aspects.

Career, employability and opportunities for continuing professional development.

Regarding our graduates' career destination, the programme students will be widely in demand by top finance, IT firms, infrastructure service firms, government organizations. Moreover there is a widespread and growing interest in almost every industry for improving the technology practice related to finance sectors. It is anticipated that a good number of students on the programme will be sponsored by their employers as continuing professional development.

Through the programme trading, the graduates will have the necessary background to keep up with advance technologies and knowledge related to finance, both in research and engineering. Typical areas to pursue a career include: trading firm developer, software architect, financial system engineers, financial risk analyst, business consultant, financial auditor, fintech researcher (in academia or industry), as well as managers of various kinds in government and public sector positions in relation to the financial systems. These are highlight demanded positions in multiple sectors including banks, investments, trading, IT firms, start-ups, insurance company's consultancy firms, etc. There are well established career development paths and certification schemes including well established Chartered Financial Analyst (CFA). There is major a booming demand in the industry to hire graduates with strong technology background and have finance related knowledge.

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 in Business Informatics - Advanced Technology for Financial Computing
Programme Proposer	Stuart Anderson, Neil Pollock, Tiejun Ma and Valerio Restocchi,
Strategic Planning	Our proposed new MSc is part of Informatics and Business School's collaboration plan as a growth area for a number of years. The MSc is part of a wider initiative across the University to establish a network of researchers and forms a stage in connecting relevant courses across multiple disciplines. It fits with the University's Data Driven Innovation strategy and its Fintech strand, which we expect must evolve to encompass research more broadly on advanced technologies (e.g. AI, Data Science) for future digitalised financial services. The University has been exploring opportunities with a number of strategic partnerships, financial technology is one of the demand areas which is scheduled for future development. While Informatics is leading on MSc in Business Informatics - Advanced Technology for Financial Computing, the Business School also planned a new MSc in Business Informatics – Technology Management and Digital Future. Both Schools have strong willingness and strategically plan to work together on the Business Informatics postgraduate education strand.
Recruitment *Please provide a detailed commentary on your marketing and recruitment strategy.*	We would expect standard Informatics MSc admission criteria (e.g. A UK 2:1 honours degree, or its international equivalent, in informatics, artificial intelligence, computer science, electrical engineering, , mathematics, business graduates with good programming, quantitative background, physics or psychology.) applies to this new MSc as we are mainly targeting CS graduates and related disciplines with reasonable quantitative background. There is a strong push from central government for research and teaching in financial technologies, as part of the national UK AI and Data Science Innovation Strategy. This is because there is a dire need for highly qualified personnel and finance sector is UK's flagship sector with world-wide reputation. London is a world top finance centre and leading on technology innovation. Edinburgh is UK's second largest city, which hosts financial services with booming technology firms and start-ups. The industry is facing a serious shortage in the area and graduates with technology expertise and finance related knowledges are in high demands. Within an increasingly competitive global employment context, however, graduates that tend to be most successful are those who can demonstrate an ability to combine technical skills with business skills. These include graduates who display deep technical skills with an understanding of the broader management and business issues surrounding information technologies that are required for effective problem-solving in an advanced IT context; and those who display deep business skills while at the same time demonstrating a solid if broader understanding of technology. The programme targets students that aim at becoming professionals or researchers in fintech related

space. Top graduates of the programme will follow careers leading to high-profile positions such as Chief Technology Officer (leader of all technology initiatives in a company), Technology Consultants (design the best possible fintech solutions), System Architects (desig, build, and oversee the implementation of network and financial systems for IT or finance companies) etc. They will also be ideally placed to become researchers in the area of fintech both in academia and industry.

There are a number of marketing channels that Informatics and the Business School for recruiting the MSc students. Also our undergraduate students have had prominent recent successes increase our visibility towards prospective students interested in advanced technologies related to digital finance, but also towards industry and public sector organisations. This can in turn open funding and employment opportunities for our students.

This programme should not directly impact any other of our programmes. This is a specialised MSc programme that does not overlap a lot with the other specialised MSc programmes such as the MSc in Data Science, MSc in Cognitive Science or MSc in Artificial Intelligence in their core courses. There might be cases, where students wanted to gain knowledges cross AI, Data Science and Business/Finance related subjects, our newly proposed programme would be an ideal choice for such students and relief Informatics overwhelming demands on MSc in AI and MSc in Data Science.

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 main competitors listed below, Financial Computing MSc's offered by either other UK top Universities financial computing groups within their computer science departments such as UCL, Imperial College, University of Warwick, Queen Mary University of London, University of Stirling. Our proposed MSc covers a wide range of topics, ranging from data mining to text technologies, high frequency trading and financial engineering. Informatics has world-class AI and data science groups, renowned researchers in foundations of computer science including cyber security. Informatics made new hires of two new academic to facilitate the Business Informatics strand collaboration with the Edinburgh Business School. This strengthens our course by offering the opportunity to students to be taught a wide range of topics from leading experts in each particular area. Moreover, we offer a number of highly specialised courses, such as "Blockchains and Distributed Ledgers", "high-frequency trading" and "machine learning" that are likely to attract ambitious students and distinguish us from our competitors. Within local competition in Scotland, other Scottish MSc in Financial Technology (e.g. Stirling) offer different courses with main focus on applied aspects, lacking the strong technical aspects we offer with Informatics and Business School's world-class teaching/research academic support.

Competitor Fees *Provide the fee structure (in British pounds) of three competitors, preferably those mentioned in the competitor*	Institution	Programme	Fees	
			Home	International

analysis. These may be UK or International competitors.	University College London (UCL)	MSc in MSc Financial Systems Engineering (website)	£12,380	£26,670
	Imperial College	MSc in Computing -Management and Finance (website) MSc in Financial Technology (website)	£ 9,250	£ 30,250
	QMUL	MSc in Financial Computing (website)	£19,300	£19,300
	University of Stirling	MSc in Financial Technology (website)	£6,500	£15,950
	University of Reading	MSc in Financial Technology (website)	£16,500	£23,750

FEES AND COSTING		
Programme fees *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-Scotland / EU	
	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 (initial cost estimation draft).		
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	5	10	10
International	15	20	20
Supporting Research What market research has been planned or completed to support the predicted student numbers?	These numbers are based on an estimation based on competitor University's student numbers as well as our estimated projection colleagues' input. Those numbers are also likely under-estimates due to booking demands in financial technology related education market. The school has a history of attracting students onto specialized MSc degrees such as the Masters in Design Informatics and the Masters in Artificial Intelligence, both of which regularly reach numbers similar or larger than the ones above. Within the MSc in Data Science, there are increasing number of students who wanted to study financial technology related subjects as well as proceed with financial technology related dissertation projects. It is anticipated that this MSc is a cross-area problem impacting a number of aspects of Computer Science and well Business related study subjects and as a result, a good number of academic staff within both schools work on it directly or indirectly. The most likely cause of sustainability issues for the program would be if we no longer have enough staff to teach and support the courses or take on project students but with Informatics and Business School's new academic hiring, such risk is low.		

PLANNING AND RESOURCES	
New Courses	1 new specialist business informatics course will be introduced to complement the courses we already teach: • Data-Driving Business and Behaviour Analytics

	The module is designed to bridge the knowledge gap between Informatics and Business disciplines. It will provide students opportunities to use informatics technology, mathematical modelling techniques to study real-world business challenges. The initial course proposal is submitted together with this programme proposal to the Board of Studies (BoS). The full course proposal will be brought to the BoS for approval in the stage 2 of this programme proposal. See attached outlines of the course proposal. In addition, enrolled MSc students will attend informatics ethic related research seminars and non-credit bearing workshop to cover ethic related training topics.
Facilities and Equipment	The programme does not have extra estates requirements or equipment requirements and will be relying on existing teaching and learning facilities within both Business School as well as Informatics for enhancing the students' experience, in particular during their summer projects.
Staff	Except the 1 new module proposed in this programme (will be taught by the newly hired Business Applications for Informatics Lecturer), the proposed specialist courses are already being resourced by the School of Informatics and School of Business. With the newly recruited 2 academic staff who will responsible to run the new programme and teach the new module. So there is adequate teaching staff to resource the programme, maintain the curriculum. The Business School also have liaison academics (e.g. Prof. Neil Pollock), who will support the Business Informatics collaboration. The risk of not having adequate teaching staff for the core courses of the programme is relatively low. Regarding the staff for dissertation supervision, we will mainly rely on Informatics supervision capacity (e.g. 2 Business Informatics academics to cover this MSc related area), while we welcome Business/Math supervisors (dissertation supervision payment scheme would need to be discussed) but within targeted 20 students to start with, we could cope with Informatics supervision capacity and may not rely on other schools to ensure a smooth student supervision experience.
Resource Sharing	Given the scope of the proposed programme, the proposed DPT includes courses from the School of Business and School of Mathematics. We have consulted with colleague academics from both Business School and Mathematics and they welcome such collaboration. We will further our consultation with module leaders included in the DPT, and make sure that we will be able to run the new programme smoothly while have shared resources. Some of the courses having restricted capacity, we will need to devise rules for prioritising students registration. This aspect has not yet been finalised and will be discussed further. Such rules need to be devised carefully and require approval of the corresponding Board of Studies.

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:	
Programme Proposer:	

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

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:	

Document Control

Date approved: Start date:	Amendments:	Date for next review:
Contact name & role: Matt Elliot	Department: College Academic Affairs	Email: Matt.Elliot@ed.ac.uk
If you require this document in an alternative format please email: deanqa@exseed.ed.ac.uk		