Research and Higher Education Division
Royal Geographical Society (with IBG)
1 Kensington Gore

Dear RGS-IBG Accreditation panel

Subject: Moderate changes to MSc Smart Cities and Urban Analytics, becoming MSc Urban Spatial Science commencing September 2022.

I write following up on correspondence with Dr Martin Davis regarding changes to the RGS accredited MSc Smart Cities and Urban Analytics programme at the Bartlett Centre for Advanced Spatial Anaylsis, UCL. I believe this to be classed as a moderate change, and after consulting Dr Martin Davis, present the following:

- A covering letter, clearly outlining the scope of the changes and reasoning.
- Module summaries, for new optional modules.
- A revision of the learning outcome mapping conducted in the first application.
- An updated assessment matrix.

Rationale for changes

As part of an internal strategic review, between September and December 2020 we conducted a full audit of our teaching and programmes, including interviews with teaching staff and review of our programme and module aims. The revision of the MSc Smart Cities and Urban Analytics (SCUA) is a direct consequence of that effort and of subsequent discussions to which all staff were invited to contribute.

The principal challenge identified is that, over time, there has been convergence in the taught content of the MSc Smart Cities and Urban Analytics and MSc Spatial Data Science and Visualisation programmes, and that for historical reasons the programme description and outcomes for the latter were only ever weakly articulated. We believe that this has had negative impacts on the student experience since they have trouble identifying the correct programme and staff have difficulty connecting module aims and objectives to the overarching programme. At the same time, the detailed specification for each programme has left us with little scope to enhance student choice by creating and running new optional modules that build on the interests and expertise of staff recruited over the past two years.

Our new MSc Urban Spatial Science seeks to address this imbalance by reformulating our degree offer and teaching around a single programme specification with a small set of core modules in Term 1 and a much larger number of optional modules thematically grouped into informal pathways in Term 2. The use of thematic pathways will help us to prioritise new module development and to better-advise students, while also giving us the ability to more quickly respond to changing student demand in a flexible manner than is currently possible. The new programme name — Urban Spatial Science reflects the joining of the urban aspects of our teaching with the spatial and scientific dimensions (including data science) to our work.

Changes

All modules within the original MSc SCUA still exist within the new MSc Urban Spatial Science, however the following modules are no longer compulsory:

- CASA0008 Smart Cities: Context, Policy and Government (15 credits) – term 2
- CASA0002 Urban Simulation (15 credits) – term 2
- CASA0009 Spatial Data Capture, Storage and Analysis (30 credits) – term 2/3

Instead students will select a pathway (see the table below), at UCL ‘pathways’ represent informal specialism that is not recorded on the degree, ultimately a student could select modules and make their own degree (aside from the compulsory ones), although this won’t be encouraged as the pathways will contain complementary modules for the specialism. Students will be able to select two modules to total 30 credits, at least one of these should be taken from

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within the CASA module catalogue - both could be, but students will also have the option to take one 15 credit elective outside their programme of study, from a list of suitable departments. Previously in SCUA there was only a choice of one module, with the large majority of students selecting Introduction to Programming (now called Foundations of Spatial Data Science). This was consistently raised within programme feedback and now students will be able to take the programming module as well as another optional or elective module. All other aspects of the MSc detailed in the RGS application such as, maintaining standards and professional practice will remain unchanged.

Current programme (last delivery commencing 2021)	Programme commencing 2022
Degree title: Smart Cities and Urban Analytics **Compulsory modules** • CASA0005 Geographic Information Systems and Science (15 credits) – term 1 • CASA0007 Quantitative Methods (15 credits) – term 1 • CASA0001 Urban Systems Theory (15 credits) – term 1 • CASA0008 Smart Cities: Context, Policy and Government (15 credits) – term 2 • CASA0002 Urban Simulation (15 credits) – term 2 • CASA0009 Spatial Data Capture, Storage and Analysis (30 credits) – term 2/3 • CASA0010 Smart Cities Dissertation (60 credits)- term 3 **Optional modules** • CASA0013 Introduction to Programming for Spatial Analysts (15 credits) – term 1 • CASA0011 Agent Based Modelling for Spatial Systems (15 credits) – term 2	**Degree title: Urban Spatial Science** The degree consists of compulsory modules in term 1 and indicative pathways or recommended modules in terms 2 and 3, alongside a final dissertation in term 3. Compulsory modules (45 credits + dissertation): • CASA0005 Geographic Information Systems and Science (15 credits) – term 1 • CASA0007 Quantitative Methods (15 credits) – term 1 • CASA0001 Urban Systems Theory (15 credits) – term 1 • CASA0010 Urban Spatial Science Dissertation (60 credits) – term 3 **Smart Cities and Urban Policy Pathway** Pathway modules include: • CASA0008 Smart Cities: Context, Policy and Government (15 credits) – term 2 • CASA0002 Urban Simulation (15 credits) – term 2 • CASA0023 Remotely Sensing Cities and Environments (15 credits) – term 2 **Data Visualisation Pathway** Pathway modules include: • CASA0006 Data Science for Spatial Systems (15 credits) – term 2 • CASA0003 Digital Visualisation: Group Mini Project (30 credits) – term 2 **Urban Modelling and Simulation Pathway** Pathway modules include: • CASA0006 Data Science for Spatial Systems (15 credits) – term 2 • CASA0011 Agent Based Modelling for Spatial Systems (15 credits) – term 2 • CASA0002 Urban Simulation (15 credits) – term 2 All pathways have 30 credits of additional optional modules. At least one of these should be taken from within the CASA module catalogue - both

	could be, but students will also have the option to take one 15 credit elective outside their programme of study, departments at UCL with suitable relevant elective modules are listed below. This allowance could be used with a 30 credit CASA module (e.g. Data Visualisation: Group Mini Project). In addition to the modules listed above (on other pathways) CASA also offers: • CASA0013 Foundations of Spatial Data Science (formerly Introduction to Programming for Spatial Analysts) (15 credits) – term 1 • CASA0009 Spatial Data Capture, Storage and Analysis (30 credits) – term 2/3 **Elective modules** Departments at UCL with suitable relevant elective modules include: Geography, Science, Technology, Engineering and Public Policy, Civil Environmental & Geomatic Engineering, Information Studies, Computer Science, Bartlett School of Environment, Energy and Resources, Bartlett School of Architecture and the Bartlett School of Planning.

In addition, are some minor module changes:

Module	Current version	New version	Rationale
CASA0005 Geographic Information Systems and Science (15 credits) – term 1	Assessment: 3,000 word geo-spatial report	Assessment: open book exam	In previous years there has been a pronounced divided between grades, often founded upon the ability to formulate a research question to investigate for the coursework. The purpose of the module is to install GIS skills and so the assessment has been altered to an open book exam with set spatial questions, submitted through GitHub classroom. Students will build to developing research questions in the dissertation module.
CASA0013 Introduction to Programming for Spatial Analysts (15 credits) – term 1	Module name: Introduction to Programming for Spatial Analysts	Module name: Foundations of Spatial Data Science	Although the module is still intended to introduce students to Python programming, it now does so by embedding the programming content into an applied spatial data analysis framework which incorporates features of the 'data science' pipeline including: data acquisition, cleaning, transformation, and presentation, as well as the use of GitHub and Markdown for documenting and sharing code and outputs. The aim of these changes is therefore to teach students — many of

			whom have never coded before — the how of programming through a grounding in the why: how can we use the concepts taught to explore and analyse spatial data so as to inform policy-making or investment decisions? This change also signals to students that the purpose of the module is not just to learn how to code, but to acquire the foundations of the concepts, tools, and techniques that they might be expected to deploy both in subsequent modules and in a professional working context.
CASA0010 Smart Cities Dissertation (60 credits) – term 3	Module name: Smart Cities Dissertation	Module name: Urban Spatial Science Dissertation	The module name has been updated to reflect the new programme title, the content and assessment remain the same.

We kindly request that the RGS accreditation for the MSc Smart Cities and Urban Analytics is transferred to the revision of the programme, entitled MSc Urban Spatial Science.

Please do not hesitate to contact me should you require any further information.

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