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| **Teaching Programme** | **Environmental Science** |
| **Date due** | **w/c 11/1/2021** |

Please complete this form to tell us about your future plans for your Teaching Programme. You are asked to complete a 1 page strategic three-year plan for the programme and also to detail your plans for infrastructure and technical support, highlighting areas where investment is required, what academic hires would help to deliver your strategy, and outline your expected student recruitment over the next year.

**Strategic Teaching Plan for next 3 years 2021-2023**

* *Likely long-term directions which may require addressing through academic hires/infrastructure*

To meet the goals and targets of the Env Sci programme (see below), strategic hire of a dual track lecturer specialising in environmental data science and climate science will be key to success and additional capacity building, including intra-FSE teaching initiatives currently in development. The programme also urgently requires continuous and ongoing investment in teaching IT infrastructure and focussed IT teaching support (dedicated technical staff) shared with other programmes (details and needs listed on next page).

* *main goals and targets to be achieved.*

Priority medium-term (3 year) ambitions of the Env Sci (ES) programme are to: 1) further modernize its offering in terms of general environmental data science and use of IT (e.g. coding applications to Environmental data and modelling). This is a key employability skill and has received high praise from students learning such skills in the current year’s brand new delivery of core units on our redesigned programme, such as Environmental Modelling and 1st year prerequisite skills/units. The ambition is to further embed progression of these skills in year 3 through modifying existing unit content with the possibility of small programme structural changes to accommodate (e.g. one new data science practical-related unit in year 3). And 2) Develop our climate science offering (with strategic hire) to include regional-scale climate and environmental process modelling as part of the core of our programme whilst feeding into faculty-wide initiatives and ambitions on Environmental Engineering, Data Science MSc, and other related programmes.

* *current activities that will grow or reduce, and implications for departmental workload*

Our UG numbers are increasing strongly year-on-year because of evident attractiveness of our new pathway designs and flexibility (evidenced by UCAS applicant and existing student feedback). The number of students on our 2+2 (China) atmospheric programme has dropped significantly in the current year (as this changed from a single-university 3+2 programme, to a wider but informal/optional 2+2 programme) but we hope to build this (through targeted recruitment activities in China) and have capacity to increase this cohort (up to ~20). However, we are at current capacity regarding final year project offering. Class sizes on some units are now >80 causing problems with IT estate especially. The project and tutorial workload is currently over-capacity. A plan to manage this and permit further capacity-building in the near-term will be to adopt other FSE departmental approaches to small group tutorials and final year projects. This includes an agreed plan to make final year projects “pair projects” with students working on datasets/projects in pairs and supervised in pairs (but with independent assessed report deliverables). This will reduce staff load back to capacity, retain good student experience and use other (e.g. lab) resources more efficiently. 2nd year small group tutorials are also proposed to reduce from 10 sessions per semester to 6 for professional development (EART29200) with a more efficient content focus. However, further capacity building will require strategic hire.

* *future development of the course and recruitment risks / opportunities*

Our new programme has not yet run one full 3-year cycle and Covid has disrupted ability to assess it in the round. A pause to allow the programme to bed in and reflect on its strengths and weaknesses is required for one more year. Future developments are also summarised above but concern more inter-faculty and intra-faculty teaching provision, by offering (and receiving) units to synergistic programmes outside of DEES with careful thought. Key partners identified in this include Biology, Physics, MACE and Chemistry. A specific hindrance to this objective concerns the consistency, integration, and governance, of inter-faculty teaching (i.e. biology specifically in the context of Env Sci, and Geography historically). We recommend that the Teaching College is engaged in improving inter-faculty strategic teaching frameworks to facilitate this. At present, inter-faculty teaching represents a systemic risk to this programme, but it is imperative that we be able to offer it and we have ambitions to expand if these frameworks can be made fit for purpose. This risk is mitigated substantially by the strong links we have to Biology, especially via Tucker Gilman as EECB pathway lead and interim programme director for the next academic year. Opportunities include data science and climate science, which represent potential new recruitment growth areas and synergy with new and growing PGT courses (e.g. Data Science Msc, MPEC)

* *interactions with other departments, faculties*

See above.

* *brief reflection on impacts to UN Sustainability goals and CO2 footprint*

Our international fieldtrip (3rd year to Tenerife) and one other 2nd year trip (optional) in the EECB pathway are carbon-intensive (international flights). However, they are an integral and spiritual part of our programme at the core of Env Sci practice and employability. We recommend that the university should create its own carbon offsetting scheme that the programme may be able to invest in to mitigate carbon – e.g. solar panel projects etc to offset carbon. We also envisage making international trips optional for carbon-conscious students with an alternative in place. In addition, carbon awareness and mitigation will be a core planning aspects of new 4th year independently planned field trip projects in the new programme.

***Whats gone well/less well?***

The new pathway and programme design (and its inherent flexibility) is clearly a recruitment win. We have seen much positive feedback on some of the new core 2nd year units in particular (esp. Env Modelling). It is too early to assess overall performance as this programme has yet to run a full cycle and the pandemic clouds any assessment further. Aspects that have gone less well include non-EART teaching provision in terms of student outcomes (poor marks and negative student feedback), and a lack of direct authority/control to oversee such provision or map to FSE norms/frameworks (as described above).

*Please provide evidence to support the aspirations and how new developments will be realised. It is important that you consider the staff, technical support and infrastructure resources that will be necessary to deliver any increase in activity and to justify these in your plan.*

**Outline how you will use university/department infrastructure and technical support in the next year, highlighting where any investment is required**

A detailed quantitative technical resource usage survey was completed for all EART units and student projects on the programme. This is summarised in % FTE as: IT technician support (220 hours – 0.15 FTE), workshop technical support (75 hours – 0.05 FTE), laboratory technical support (310 hours, 0.21 FTE). The IT technical support is especially crucial to ensure delivery of flagship new core units that modernise our offering (as above). We cannot continue without this as bad student outcomes have already materialised this AY (failure of kit, not enough access to remote machines etc). This will be helped with the planned purchase of a teaching-dedicated server for DEES in general – however, IT support at department level will be key to success. A very large number of samples in labs are required to support final year projects at present – efficiencies are needed here and pair projects (as above) may mitigate this in the next academic year.

**Outline any upcoming staffing changes or gaps and opportunities (eg fellows) to achieve strategic goals or maintain existing strengths**

The Programme will lose a retiring professor (atmospheric science) this AY. This further reduces atmospheric science teaching capacity year-on-year on top of last year’s retirement of another senior professor. Strategic investment in this area would be required to maintain capacity and/or expand intra-faculty climate science development goals. Two track fellows are due to come on-stream into the Env Sci pathway in the next 2 years. This adds capacity to the general programme but not in prioritised growth/development areas of the programme (and its reach beyond DEES).

**Student recruitment**

*Please estimate how the maximum capacity of your programme in AY21/22, and what strategies you have in place to maximise quality/size of cohort, and employability of graduates. This plan should be developed with the Admissions Tutor Rhian Jones.*

We are at (or over) capacity when the overlapping relationship with the MPEC programme is considered, as staff are effectively shared across these programmes. Final year projects create a particular pinch point. Further recruitment growth can only be maintained with strategic hire mapped to priorities outlined above. However, current recruitment activities include further advertising the flexibility of our programme’s design and common first year and we have plans (through the recruitment committee) to commit to more school outreach work (with each academic staff member suggesting an outreach/school activity to deliver). A particular emphasis will be placed on recruitment of BAME students and WP schools. We also plan to improve marketing materials for our new foundation year offering and add Earth and Environmental Science-specific content in the foundation programme, which will improve quality of intake at first year and allow international and home students (not meeting initial entry requirements) to apply. Further ideas include a one-week summer camp for A-level students.

**Graduate employability**

*Please outline any changes planned to improve the employability of graduates, discussing with the employability committee chair, Luis Garcia Carreras.*

Careers provision has waxed and waned in tandem with the capacity of the careers service to deliver bespoke in-house support. General employability training and awareness are offered through all years via pass/fail units, in tutorials, and strong (adviser-driven) signposting to careers services. Employability of graduates on our programme has been enhanced with the new programme design and modern skills in data science and coding (key skills for employers). However, we can and should do more. An industrial liaison board should be resurrected and better engagement with our alumni are quick win areas for improvement in embedding employability.

An employability committee has been set up to start this year, which will oversee and develop plans to improve employability training in our degree programmes. The plan is to have a more consistent provision year-on-year which does not completely rely on the careers service, as well as feeding better into recruitment and marketing. Work on the industrial liaison board is still ongoing, particularly to look at how to keep our teaching content worthwhile and attractive for employers if it needs to be delivered remotely in future, or in a long-term blended learning design.