Approach to manage and promote inter-and trans-disciplinary (ID/TD) teaching and research supervision at the University of Cape Town*

***This document specifically outlines guidance for the development of ID/TD academic degree programmes.**

There is general support amongst the Faculties that ID/TD[1] research is important, and in fact, is one of the key drivers in assisting the University of Cape Town to become a research–intensive university that supports new and integrated ways of solving complex research questions. There is, however, a perceived challenge in that cross-Faculty research and postgraduate teaching are seen by some to advantage one Faculty over another. Academics in one Faculty, performing co-supervision and/or teaching tasks in another, or even in a different department in the same Faculty, view this as an additional load for which they do not get departmental and/or Faculty recognition.

The university recognises that strong disciplinary foundations are needed to anchor inter and transdisciplinary programmes and is therefore committed to protecting the integrity of disciplines, whilst providing an enabling framework for ID/TD.

We therefore attempt below to outline guidelines for the planning, governance and operations of proposed ID/TD academic programmes and research supervision in these programmes in order to promote and support ID/TD initiatives. An important underlying principle is that academic considerations should drive decision making, not internal resourcing considerations. The development of an ID/TD programme - as with all new academic offerings - will need to be academically sound, and therefore a clear academic rationale, purpose, and assessment of potential target market should be required for all new programmes and qualifications.

We propose a flexible model based on a philosophy that recognises the value and importance of staff involvement in ID/TD initiatives in departmental and faculty workload allocation models, and that such involvement should be taken into account in performance and promotion criteria. This philosophical approach would need to be accepted and managed by Deans and Heads of Department, recognising that a meaningful proportion of staff time could be spent on ID/TD activities, and appropriate resourcing provided. The flexible model approach will be reviewed within a 3-year period.

There are two main components of ID/TD, which should be noted here. These are postgraduate programmes that involve teaching and/or research, and institutional ID/TD research. This document recognises that with regard to the latter, there are governance structures and funding protocols and mechanisms for the support and facilitation of ID/TD research. Such mechanisms include the existing Signature Themes and the new Institutes currently being established, where support is needed for leadership and coordination, workshops, research proposal development, etc., and collaborative interdisciplinary research projects – discrete projects within a particular inter or transdisciplinary problem area that cannot easily be funded via traditional funding routes and that have the potential for high impact. This document is not intended to focus on such initiatives but

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[1]We adopt the definition of interdisciplinary research accepted by National Science Foundation in the USA: 'Interdisciplinary research is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice'. In some instances, interdisciplinary research leads to knowledge being integrated in such a way that a field beyond the original disciplines is created, often referred to as transdisciplinary research. We note that transdisciplinary programmes could involve planning and execution with partners from outside of the University. In this document we will refer to interdisciplinary/transdisciplinary research by using the acronym 'ID/TD'.

rather on the development of ID/TD postgraduate programmes that involve teaching and/or research.

Possible variants of ID/TD academic programmes:
Two variants of ID/TD programmes are envisaged to fall under the proposed approach.

- An inter or transdisciplinary coursework Master's degree programme (the term programme is used throughout in a generic sense of academic study, and not a named degree programme) that involves the integration of curriculum content across disciplines into a single programme, or core courses within a programme, rather than a collection of less integrated pre-existing courses (which would be considered a multi-disciplinary offering)
- An inter or transdisciplinary research degree training programme that could include for instance – a summer school course for incoming students (not necessarily credit bearing) on key approaches to inter or transdisciplinary research, and an introduction to the broad intellectual domains that the programme covers.

However, the principles regarding recognition for ID/TD contributions should also extend to research student supervision outside of formal programmes, where an individual research student is supervised by staff from more than one department.

Enabling ID/TD research and teaching:

In order to enable ID/TD research and postgraduate teaching an initial amount of funding will be made available centrally from the VC's strategic fund. This funding will be primarily to support the start-up of interdisciplinary and transdisciplinary training initiatives, particularly for the development of the *core inter or transdisciplinary components* for the courses. There is an expectation that successful ID/TD programmes will receive adequate support after the start-up period for staffing, space, etc. as part of the general faculty (or-multi-faculty allocation).

This initial funding could support:

- The development of new inter and transdisciplinary courses
- Initial buyout of faculty staff time from departmental responsibilities to develop, establish, convene, and teach new ID/TD initiatives
- Established soft-funded researchers (via a proportion of salary) to dedicate time to establishment of the new initiative
- Administrative support costs
- Graduate bursaries and postdoctoral bursaries to start a graduate programme
- Marketing and other activities

Proposals for funding would need to be accompanied by a business plan indicating faculty (ies) long term commitment to mainstream the costs and a forecast of sustainability. In preparing proposals, sources of funding other than central funds, should be investigated.

An ID/TD resourcing committee (RC) will be established. The RC will be a centralised committee convened by the DVC responsible for academic affairs. The resourcing committee will be responsible for:

   i.   Developing the application procedure for new ID/TD programmes
  ii.   Allocating funds for the development of the business plan
 iii.   Making a decision on the quantum of start-up funding

The proposed structures for inter and transdisciplinary postgraduate degree programmes:
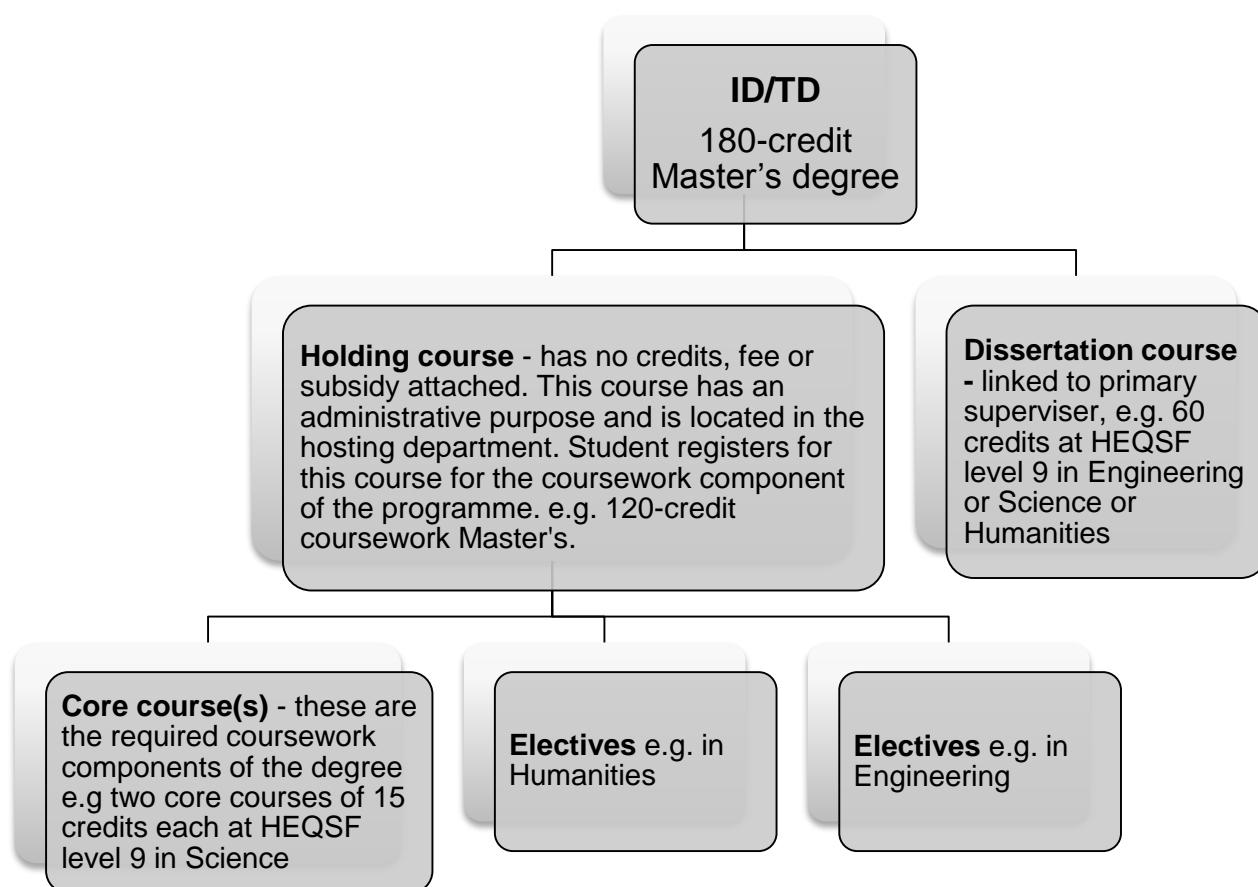
Full research programme, i.e. research Master's or PhD:
In the norm, inter and transdisciplinary research would involve co-supervision and if registration of students followed the primary supervisor, revenue generated and credit would balance out over time between collaborating departments/faculties. The status quo would thus continue.

Master's coursework plus minor dissertation programmes:
The proposed model for inter and transdisciplinary Master's programmes is the creation of an overarching *PLAN code in a hosting Faculty, and a holding course* in a *hosting Department* for the coursework component of the programme. The holding course code would carry the single final result of the coursework component of the degree for each registered student, achieved by aggregating the individual marks from the core courses and chosen electives. The student's result in each core course and elective course selected would reflect only as PA (or F) on the transcript. Core and elective courses would carry the ORG code of the department responsible for that course, and generate the course fees. Fee and subsidy income would thus flow to the Faculty offering the core course or elective course. The holding course would carry no NQF credits, and would generate neither fee nor subsidy.

The minor dissertation component of the degree programme would carry the course code of the department of the primary supervisor. See diagram below.

The proposed model for inter and transdisciplinary Master's programmes

Governance:

An ID/TD teaching programme (Master's or PhD) requires the support of participating departments and Faculty(ies). Such programmes are likely to be closely linked to recognised ID research grouping or structures, normally a URC recognised research grouping or recognised institutional initiative such as the PVC initiatives. This will help to promote the sustainability of such a programme through providing a holding research space.

Where a programme operates across departments and/or faculties, a governance structure and academic strategy need to be agreed. A Steering Committee (SC), whose main responsibility is oversight and ensuring the individual responsibilities of the departments offering the core modules and electives as part of a programme, would need to be established with representatives from all contributing departments. The initiators of the programme would constitute an initial working group that will develop a draft proposal, which would lead to the formation of a formal SC.

The Steering Committee would nominate an agreed hosting department (see below) and Faculty. The affected HoD and Dean would need to agree. The Chair of the SC would be from the hosting department. The Steering Committee would oversee departmental level academic planning, quality assurance, and exercise financial oversight. All courses and/or programmes that have been developed and recommended by the Steering Committee will be approved through the respective Faculty accreditation committee and the respective Dean's Circular (DC). The programmes would then be steered to PAAC for scrutiny and then to the Principal's Circular (PC).

Administrative structures:

Full research programme, i.e. research Master's or PhD:
Unchanged from present

Master's coursework plus minor dissertation programmes:
Approval of a new ID/TD programme is against two course codes – a coursework component and a dissertation component as described above.
- Students will be registered against the overarching PLAN code that represents the programme. A hosting Faculty will be decided on by the SC and should be the Faculty in which the hosting Department is located.
- Students will be registered against an overarching holding course in the hosting department and Faculty. This course holds the integrated result, which includes the core courses and elective components, and is expressed as a single result in the form of a percentage and class of pass.
- Students will register for the required core courses and appropriate elective courses.
- Students register for the minor dissertation course code that reflects the department in which the primary supervisor has an appointment[2] (typically on completion of the coursework component).

Academic administration:
- For dissertations, appointment of examiners and the deliberation on the examiners' reports follow the rules of the Faculty of the primary supervisor/where the dissertation is registered[3].

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[2] In rare cases a student may register in a department other than where the primary supervisor holds an appointment in accordance with rule G5.5. In such cases agreement is necessary between the heads of the two departments.

- A recommendation on the dissertation (pass, fail, corrections, distinction) must be sent to the hosting Faculty that owns the overarching holding course. Appropriate inter or transdisciplinary expertise should be included in the deliberation on the examiners' reports. The hosting Faculty's rules will apply for the award of the degree with distinction, but with recognition that the dissertation may well be of an inter or transdisciplinary.
- The package of core and elective course must add up to the requisite coursework credits to complete the qualification. Fee and subsidy income attribution will flow to the departments offering the various core and elective courses which constitute the coursework component and which would individually carry the relevant departmental course codes.
- The results for these courses will be expressed as PA (or F). [*The grading basis will need to be set in the background to pass/not pass for students on the programme if there are other students taking the same course towards another qualification in which the result must be expressed as a percentage.*]

Role of the hosting department:
- If there is equal contribution by departments to a course (core or new elective), the SC and the respective HoDs decide on the home department.
- The hosting department is administratively responsible for the ID/TD core courses
- The hosting department has academic oversight for the full programme
- The hosting department is responsible for the academic administration of the degree programme, viz. assessments and marks processing, allocation of results, application procedures, etc.
- The Master's programme convenor should ideally be located in the hosting department.

Proposed programme and course approval process:
- The Steering Committee decides (with agreement of the affected HoD and Dean) on the holding Faculty and Department. Core course/s & the overall Plan structure must be approved through the hosting Faculty via that Faculty's Accreditation Committee and if necessary, via the other faculty's committee structures if core courses are offered by more than one faculty.
- Core course/s & the overall Plan structure must be approved through hosting Faculty's DC, and included in other affected Faculty DCs for information.
- If there are staff from other departments teaching on courses, all HoDs must sign off on the course approvals.
- Electives (new and existing) and dissertation courses must be approved by the home Faculty and this information is communicated to the hosting Faculty
- Core course/s & the overall Plan structure (and new electives) approved at PAAC
- Core course/s & the overall Plan structure (and new electives) approved in PC
- Handbooks - inclusion of new Master's programme and courses in respective Faculty handbooks
- For programmes that are new named qualifications, additional external approval processes will need to be included in the planning of the programme.

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[3] Such courses would need to be created if they do not already exist, and would carry the supervisor's department course code.

Performance Criteria for staff involved in ID/TD teaching:

To circumvent instances of a possible lack of recognition of ID/TD teaching and supervision, and in the interests of encouraging ID/TD work, convening, teaching and research supervision in inter-and trans-disciplinary programmes should be embedded in the performance review criteria for academics and included in Faculty SASP and ad hominem promotion documentation (for the Deans to approve).

An important requirement is that HODs would need to manage the allocation of workloads in their departments in a manner that accommodates staff teaching on and/or convening inter and transdisciplinary programmes.

Appendix A: Recommendations on Quality Assurance:

As in the case of disciplinary programmes, quality assurance is critical within the context of academic scrutiny, with the view that procedures for continuous improvement are in place and academic standards are maintained.

It is proposed that the hosting faculty should be responsible for the quality assurance arrangements pertaining to the programmes in consultation with the Steering Committee in accordance with standard University Procedures. We propose that the following are considered as part of the QA arrangements as they relate more specifically to ID/TD programmes:

- Student progression rules and programme requirements should be clearly outlined and decided upon by all participating departments
- Plans for the review of the programme review should be articulated
- Processes and resources for internal and external examination should be considered taking the particularities of inter and transdisciplinary programmes into account and communicated to students
- Rules for distinctions should be decided on and communicated to students
- The SC and the Department HoD responsible for the overarching holding course must have access to external examiner reports on all modules taken by students

The Guidelines and Procedures for Academic Reviews notes that ID/TD programmes are to be reviewed within the standard 10-year cycle.

The Research Office is responsible for reviewing ID/TD entities with URC accreditation. Other interdisciplinary research initiatives will be reviewed as part of the reviews of academic departments.

Appendix B: Example of programme

Master's specialisation in Data Science
This will be a cross-Faculty Master's course with input from the departments of Statistical Sciences, Computer Science, Astronomy, Physics, Applied Mathematics, the Bioinformatics unit in the Health Sciences Faculty and Data First in the Commerce Faculty.

All students will register for the overarching course STA5080W: Data Science coursework, which will carry the combined final result for the coursework but with 0 NQF credits.

Students will also register for five compulsory core curses* and two elective courses from the list below:
Core Courses:-
*STA5075Z: Statistical & High Performance Computing
*STA5076Z: Supervised Learning I
*STA5077Z: Unsupervised Learning
*CSC5007Z: Databases for Data Scientists
*CSC5008Z: Data visualization
Electives:-
AST5004Z: Data Science for Astronomy
IBS5004Z: Bioinformatics for high-throughput biology
PHY5007Z: Data Science for Particle Physics
STA5073Z: Data Science for Industry
STA5074Z: Decision Modelling for prescriptive analytics

There will be a range of possible minor dissertation codes, depending on the discipline in which the student chooses to register for the minor dissertation component. The proposed minor dissertation codes are:
AST5005W: Data Science Minor Dissertation
CSC5009W: Data Science Minor Dissertation
IBS5005W: Data Science Minor Dissertation
PHY5008W: Data Science Minor Dissertation
STA5079W: Data Science Minor Dissertation

Appendix C: Example of Transcript

Unofficial Transcript

Name   :

Campus ID :

Birthdate : 1991-03-17

Requested by: Amy Rooks

- - - - - Beginning of Masters Record - - - - -

2015

Programme: MPhil(90 crsewrk/90 dissert)

Plan   : Climate Change and Development Specialisation

Code		Title			
EGS	5012W	Masters in Climate Change(cwk)	0	0	74 2+
END	5069W	Minor Dissertation Climate	90.00	0.00	GIP GIP
MEC	5088Z	Energy, Poverty & Development	21.00	21.00	PA PA
AXL	5416F	Science, Nature, Democracy	24.00	24.00	PA PA
EGS	5031F	Intro to Climate Change	22.50	22.50	PA PA
EGS	5032F	Climate Change Adaptation	22.50	22.50	PA PA

Academically eligible to continue

2016

Programme: MPhil(90 crsewrk/90 dissert)

Plan   : Climate Change and Development Specialisation

END	5069W	Minor Dissertation Climate	90.00	90.00	PA PA

Suggested further actions flowing from the above proposal:

- ACA034 and new stream/qual templates edited to include reference to ID/TD programmes [Section B of ACA034 to contain revision re how finds are allocated for ID/TD courses]