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development of an online Master's Degree

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1 **Responding to the need of postgraduate education for Planetary Health: Development of an online**
2 **Master's Degree.**

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49 **Abstract**

50 The *Universitat Oberta de Catalunya (UOC)*, the *Universitat Pompeu Fabra (UPF)*, and the Barcelona
51 Institute for Global Health (ISGlobal) have developed an online and asynchronous Master in Science (MSc)
52 in Planetary Health. The aim of the programme is to train a new generation of academics and professionals
53 who understand the challenges of Planetary Health and have tools to tackle them. The design of this MSc
54 was based on: the alignment of the programme with the principles for Planetary Health education with a
55 focus on human health; a multi-, inter-, and trans-disciplinary approach; the urgency to respond to the
56 Anthropocene challenges; and the commitment to the 2030 Agenda.

57 The MSc was recognized as an official degree by the Spanish academic system on April 2021 and launched
58 in October 2021. There are currently more than 50 students enrolled in the program coming from a broad
59 range of disciplines and geographic locations.

60 This article describes the development of the curriculum of this MSc, presents the main characteristics of
61 the programme and discusses some of the challenges encountered in the development of the programme
62 and its implementation.

63 **Keywords:**

64 Curriculum development

65 Education for sustainable development

66 Master in Science

67 Planetary Health education

68 Postgraduate education

69 Sustainable development goals

70 **Introduction: Background and rationale for the educational activity innovation**

71 In the last decades, there has been an increasing understanding of the socio-environmental
72 transformations—accelerated by the Anthropocene (1)—and how they pose an existential risk to human
73 societies and other living beings. As a result, several approaches emerged to connect the environment and
74 human health (Buse 2018 & Malee 2017) and respond to new threats, such as the climate crisis and
75 biodiversity loss (Busse 2018). One of the new approaches, Planetary Health, is based on the
76 comprehension that human health and human civilisation depend on flourishing natural systems and their
77 stewardship. This point of view requires unprecedented efforts to deal with complexity and uncertainty,
78 encourage transdisciplinary and urgent action.(2)

79 Similar to other scientific fields,(3) the challenges involved in Planetary Health are of such magnitude that
80 education at all levels must be at the forefront to obtain a meaningful response (20) (Von Borries 2020).
81 The São Paulo Declaration on Planetary Health, a global call to action from the planetary health community
82 supported by more than 300 signatories, urged to include planetary health education in all curricula levels,
83 from schools to universities (Meyers 2021).The UN report “The Future is Now” has specifically called
84 upon universities and higher education institutions to support the mission of advancing sustainability. This
85 recognizes that the education of the next generation of researchers and changemakers is one of the best
86 leverage strategies towards transformations in sustainability.(4) Recently, the ‘Our Planet, Our Future’ call
87 for action—signed by a large number of Nobel laureates—requested universities and higher education
88 institutions to urgently embed the concept of planetary stewardship in all curricula.(5)

89 In consequence, there is a growing number of initiatives to transform higher education for sustainable
90 health. The Association of Medical Education in Europe (AMEE) has suggested that to reduce CO₂
91 emissions and to meet the UN’s 2030 Sustainable Development Goals (SDGs), health-related studies must
92 equip undergraduates (and already qualified professionals) with the necessary knowledge, skills, values,
93 competence, and confidence.(6) The Global Consortium on Climate and Health Education (GCCHE)
94 surveyed 160 institutions to understand the state of climate-health curricula for health professions. The
95 results showed that educational programmes vary considerably between institutions and that the majority
96 of responders faced relevant challenges when trying to implement curricular changes in their institutions.(7)
97 A similar study conducted in Latin-America has shown that universities in this continent have similar
98 drivers and barriers for sustainability change as universities in other geographical contexts.(8)

99 There is growing evidence of new methodologies and approaches to include Planetary Health in health
100 curricula.(9–11) Among the different types of curricula, postgraduate education has received little attention
101 and yet it offers a unique opportunity to train already qualified professionals from different disciplines to
102 work multi-, inter- and transdisciplinary. In the GCCHE study cited above, only one institution reported
103 having a master's or certificate programme in climate and health. Its respondents reported that it had been
104 virtually impossible to develop new courses on climate and health in public health master's programmes
105 due to the already high course load.(7) To contribute to the development of Planetary Health education at
106 the postgraduate level, the *Universitat Oberta de Catalunya (UOC)*, the *Universitat Pompeu Fabra (UPF)*,
107 and the Barcelona Institute for Global Health (ISGlobal) have developed an online Master in Science (MSc)
108 in Planetary Health. It was launched in October 2021 and will be fully implemented in March 2023.

109 This article describes the main characteristics of this new programme and discusses some of the challenges
110 we are currently facing.

111 **Overview of the Master in Science in Planetary Health**

112 The MSc in Planetary Health (UOC-UPF-ISGLOBAL) is a fully online and asynchronous programme of
113 60 ECTS credits (European Credit Transfer and Accumulation System, 1 ECTS is equivalent to 25 hours).
114 In its first edition, the MSc in Planetary Health has been offered in Spanish and Catalan. The academic
115 entry requirements encompass undergraduate studies from a broad range of disciplines, including health
116 sciences, natural sciences, political sciences, economical sciences, sociology, law, and engineering. The
117 first cohort of students (first term October 2021) captures this multidisciplinary profile (see Figure 1). This
118 first cohort was integrated by 55 students (75 % females, 25 % males), 87 % of them were from Spain, 7 %
119 from other European countries and 5 % from Latin America.

120 The overall aim of the programme is to provide a multi- (drawing on knowledge from different disciplines
121 but remaining within the boundaries of those fields), inter- (analysing, synthesizing, and harmonizing links
122 between disciplines into a coordinated and coherent whole), and trans-disciplinary (using a shared
123 conceptual framework drawing together new disciplinary-specific theories, concepts, and approaches to
124 address common problems) (Isemonger 2018) academic syllabus, as well as applied education on Planetary
125 Health to train, promote, and empower a new generation of academics and professionals. They will be able
126 to contribute to understanding the full complexity of the challenges related to Planetary Health and
127 wellbeing; from which they will develop and find solutions and strategies to tackle these challenges. To
128 achieve this aim, the design of this MSc degree was based on a set of general criteria: (i) the programme
129 content is aligned with the principles for Planetary Health education (12) with a focus on human health;
130 (ii) it includes the essential multi-, inter-, and trans-disciplinary aspects of Planetary Health challenges; (iii)
131 it transmits a sense of urgency as a consistent attitude, considering the timeframe of the challenges that
132 involve climate and the Earth's natural systems; and (iv) it is aimed to create an impact and it is committed
133 to the 2030 Agenda.

134 This MSc programme was recognized as an official degree by the Spanish academic system on April 2021.
135 Official MSc allow the enrolment in PhD programs and therefore are a way to promote research in a given
136 field. Official degrees are subjected to a thorough evaluation process: this programme was evaluated and
137 approved by the Agency for Quality of the Catalan University System (AQU Catalunya), included in the
138 European Quality Assurance Register for Higher Education (EQAR), and the Spanish National Academic
139 Coordination body (*Consejo de Universidades*). The programme was also reviewed and supported by an
140 international advisory committee, which involved researches and academics working in areas relevant to
141 Planetary Health.

142 **Methods: Definition of the programme**

143 The definition of the programme was a collaborative process in which several actors were involved.
144 Throughout several group discussions, the direction of the programme and the academic committee
145 (<https://estudis.uoc.edu/ca/masters-universitaris/salut-planetaria/professorat>) agreed on the structure and
146 the contents of the programme (presented in the following section). Pedagogues of the eLinC centre at UOC
147 (<https://www.uoc.edu/portal/en/elearning-innovation-center/coneix/index.html>) contributed to the
148 definition of the specific learning outcomes and identify the best methodologies to achieve them. Figure 2
149 describes the steps followed to prepare the final version the programme and the actors involved in each step
150 of the process. To make the MSc in Planetary Health a coherent programme, all this process was guided by
151 Planetary Health educational framework (Faerron 2021) and the SDGs.

152 **Structure and coherence of the programme**

153 The MSc in Planetary Health (UOC-UPF-ISGLOBAL) is organized in twelve modules of 5 ECTS each
154 (equivalent to 125 hours) and structured in three thematic blocks (see Table 1). The first block (three
155 modules) provides the general context and the necessary methodologies for understanding and responding
156 to the Planetary Health challenges of the Anthropocene. It also sets the bases for an effective multilevel
157 global governance. The second block (six modules) focuses on issues identified as key challenges for
158 Planetary Health: food systems, change in land use and loss of biodiversity, water resources, global
159 pollution, urbanisation, healthy and sustainable cities, and the climate emergency. The main objective is to
160 develop the student's critical understanding of the origins and causes of these issues and its effects on
161 human health to devise and design potential solutions, as well as to evaluate possible problems and risks
162 when implementing them. In that sense, all modules from block 2 are solution oriented and are designed
163 according to this scheme: (i) description of the challenge, (ii) potential solutions to the challenge, and (iii)
164 evaluation of the possible problems and risks when implementing them. The third block (three modules)
165 integrates and applies the concepts from the two previous blocks. It includes a module with strategies that
166 promote transformative changes to address the challenges of Planetary Health, including the role of citizen
167 action and social movements; a module to introduce research on Planetary Health and familiarise students
168 with a broad range of research areas and disciplinary approaches; and a third module: the master's thesis.
169 The specific competences and their distribution thought the modules are presented in table 2. Further details
170 on each module can be found in the supplementary material (supplementary material: Curriculum of the
171 MSc in Planetary Health).

172 To make the MSc in Planetary Health a coherent programme, its structure and contents were aligned with
173 the Planetary Health educational framework (Faerron 2021) and the SDGs. Moreover, the competences and
174 learning outcomes (see table 2) cover the majority of overarching principles for Planetary Health
175 education.(12)

176 The MSc encompasses the five domains (see Table 1) proposed by the Planetary Health educational
177 framework.(13) The domains on “*The Anthropocene and Health*”, “*Systems Thinking and Complexity*” and
178 “*Equity and Social Justice*” are mainly addressed on the first thematic block of the programme. The need
179 to understand human beings and natural systems as interconnected entities (“*Understanding*
180 *Interconnection within Nature*” domain) is a cross-cutting theme in all subjects of the degree, and it is
181 especially relevant in subjects of the second thematic block. In this second block, students have to reflect
182 on the root causes of the global environmental crisis, leading them to recognise our disconnection from
183 nature. The domain on “*Movement Building and Systems Change*” is mainly covered in the third thematic
184 block of the master; it is oriented towards integrative solutions and transformative changes. In addition, the
185 five domains are—up to certain level—incorporated in all modules, providing additional coherence to each
186 module and throughout the programme.

187 The SDGs framework is embedded in the conceptualisation of the programme. It is present in the different
188 learning and teaching materials, as well as in the activities. For example, in the module “Planetary Health,
189 the Response to Anthropocene Challenges”, students are asked to explore how SDGs could operationalise
190 the concept of Planetary Health. This exercise aims to clarify that sustained improvements in human health
191 and wellbeing are linked to the preservation of key natural systems, and supported by good governance and
192 appropriate policies.(2) However, the 2030 Agenda is also approached from a critical point of view through
193 the programme discussing the need of a more ambitious and urgent framework to deal with the climate and
194 ecological crises and acknowledging some of the criticisms the Agenda received (Menton 2020). The
195 module “Global and multilevel governance in Planetary Health” integrates this critical vision. by shedding
196 light on the difficulties and governance challenges associated with the implementation of the most relevant
197 SDGs for Planetary Health.

198 **Learning environment and pedagogical format**

199 The degree has been implemented following the UOC asynchronous online educational model,(14) which
200 is underpinned by two principles: learning by doing and autonomous learning. Following this model, each
201 module of the MSc in Planetary Health is organised around the resolution (or response) to a number of
202 challenges. The challenges are inspired by real contexts of the different disciplinary areas and are oriented
203 to develop defined personal and professional skills (see supplementary material). This is achieved by asking
204 the student to complete a series of activities and/or prepare deliverables for each of the challenges. The
205 evaluation of the modules is based on the continuous assessment of such activities and deliverables during
206 the term.

207 Each of the challenges includes: the approach to the addressed issue, the description of activities to develop
208 key skills, and the learning resources and tools to complete the activities and/or prepare the deliverables.
209 Learning resources are found in the virtual classroom in an visual way. For each resource, guidance on how
210 to use it in the context of the activity and the expected amount of time required to complete each challenge
211 is provided. The learning resources available have a wide range of formats (websites, video, audio, texts,
212 or digital tools); and include both teaching resources prepared by faculty members and external resources
213 (academic papers, book chapters, scientific reports, recorded academic conference presentations,
214 infographics, and documentaries, among others).

215 During the autonomous learning process, students are supported by the faculty. In the UOC educational
216 model, there are two faculty roles: coordinating professors and course instructors. Coordinating professors
217 design the content of the module, coordinate and supervise the team of course instructors, and supervise
218 the evaluation process. Course instructors are in close contact with the students by introducing the activities
219 for each challenge, promoting participation in the virtual classroom, solving specific questions, providing
220 feedback, and evaluating the activities and deliverables.

221 The multi-, inter-, and trans-disciplinary aspects of the programme are central to Planetary Health (2) and
222 a hallmark of the MSc in Planetary Health. The syllabus has been developed by a multidisciplinary
223 academic committee, including experts on public health, environmental epidemiology, climate change,

224 political ecology and geography, international law, social sciences, economics, and ecology. All modules
225 are regularly reviewed and discussed by the academic committee, ensuring that diverse approaches and
226 views are adequately considered.

227 In the supplementary material, we present an example of how the UOC educational model is applied to one
228 of the modules of the MSc in Planetary Health (Supplementary material: Example of the implementation
229 of UOC educational model in the MSc: Module 1 "Planetary Health: The Response to Anthropocene
230 Challenges).

231 **Anticipated career trajectories**

232 The programme was planned to promote a generation of professionals who can develop a career in
233 Planetary Health. Specifically, it was conceived to train researchers, higher education professors and
234 professionals.

235 As an officially accredited MSc by the AQU (the Catalan University Quality Agency) the MSc has to
236 incorporate a strong focus on research as the source of new knowledge. All modules strengthen the
237 importance of knowledge generation as part of the solution to the climate and environmental crises. Also,
238 the programme includes a personal research work that for those interested in pursuing research serves as a
239 bridge to the PhD. Thus, undertaking a PhD to follow a career in research is one of the trajectories for
240 our graduates.

241 Graduates are also anticipated to develop careers in education and several of our registered MsC students
242 are already teaching in high-schools and universities. As commented above, inclusion of the Planetary
243 Health in the curricula of all programs and faculties has been also stated as a priority by various
244 stakeholders (von borries 2020, , mayers 2021). Though our MsC does not provide training in education
245 methods is proving useful for those in education to incorporate planetary health contents in their
246 programs.

247 Finally, and consistent with consequential and solutions oriented spirit of planetary health our MsC is also
248 strongly oriented to support career opportunities for professional working in sectors directly dedicated to
249 health and the management of natural resources, urbanization, transport among others. For instance in (i)
250 international agencies and / or non-governmental organizations (NGOs) that work in the field of health,
251 environmental preservation and/or sustainable development, (ii) health services that seek to integrate
252 aspects of environmental sustainability in health care and management, (iii) public administration that
253 works in the development and / or implementation of land management plans, town planning or energy,
254 among others or (iv) in the sustainability and corporate social responsibility departments of companies
255 related to health and the environment.

256 **Discussion**

257 This article describes the development of a multidisciplinary online master degree on Planetary Health,
258 showing its structural consistency with the Planetary Health educational framework (13) and the UN's
259 Agenda 2030. In concordance with the urgency that the climate and ecological crises request (Atwoli 2021),
260 the new degree has received the support of the national accreditation bodies and has attracted a first cohort
261 of students with a wide range of academic backgrounds in a very short period of time. We have integrated
262 the guiding criteria of complexity, multidisciplinary, and urgency (2) to develop a feasible and innovative
263 programme for postgraduate education in Planetary Health, which is also consistent with a wider set of
264 cross-cutting principles for Planetary Health education.(12)

265 Planetary Health involves a paradigm shift compared to global public health. Planetary Health integrates
266 human health with the health of the other species and Earth's natural systems something that implies a
267 broader ethical perspective to explicitly account for the value of future human generations and non-human
268 species. Planetary Health also extends the global public health predicament of social sciences approach in
269 dealing with health inequalities and equity to the understanding of the interactions between social systems
270 and ecosystems and to deliver solutions to protect and restore the natural systems on which human health
271 depends. Planetary Health shares this paradigm shift with other approaches. Busse et al (ref) have analysed
272 some of the health approaches that connect the health of ecosystems, non-human organisms and humans

273 including occupational and environmental health; political ecology of health; environmental justice;
274 ecohealth; One Health; and ecological public health. As the authors have noted, the proliferation of
275 approaches emerging from different disciplinary fields, can lead to confusion due to overlaps in concepts
276 and terminology (Busse CG 2018). As a result of the new approaches, are numerous initiatives to align
277 postgraduate education in the health sector with the challenges of the climate crisis and the Anthropocene.
278 For instance, the Faculty of Public Health and Training Programme Directors—from the 13 public schools
279 specialised in health across the UK—have recently reported an initiative to strengthen sustainable
280 development in public health consultant education.(15) Postgraduate education in One Health has already
281 come a long way with a large number of master programmes, which either highlight One Health in the
282 programme’s name or include it as a feature component.(16) In contrast, postgraduate education initiatives
283 focusing on Planetary Health are less common. To our knowledge there are no other master degrees on
284 Planetary Health. However, we are aware of other universities planning to launch masters on Planetary
285 Health soon and the Stanford University and the London School of Hygiene & Tropical Medicine (LSHTM)
286 have recently launched a Planetary Health Postdoctoral Fellowship programme (17). Moreover, It is very
287 likely that many schools of public health are currently developing specific postgraduate modules on
288 Planetary Health like the ones in the University of Toronto Dalla Lana School of Public Health (18) and
289 the UPF. (19)

290 Beyond the described initiatives, to our knowledge, our programme is one of the first MSc degrees fully
291 devoted to Planetary Health. A relevant innovative component is its online and asynchronous methodology,
292 responding to a call by young academics to expand online training for Planetary Health, which can
293 contribute to boost access to high-quality education programmes for global audiences (20) and foster
294 education at different stages of the professional career. The MSc is available in Spanish, offering an
295 opportunity to expand Planetary Health education to Spanish-speaking countries. English version is
296 currently being considered.

297 A major consequence of the global and complex nature of Planetary Health challenges is the need of close
298 collaborations across different disciplines; the approaches towards such collaboration are diverse and they
299 can be multi-, inter-, and trans-disciplinary. The importance of multidisciplinary and interprofessional
300 education has been largely recognised in the postgraduate education of public health and global health
301 (21,22), and we have built on this tradition.

302 The adoption of a multi-, inter-, and trans-disciplinary approach (Isemonger 2018) has several main
303 implications, such as the need of a faculty with a diverse background in the disciplines involved in the
304 *corpus* of Planetary Health. To achieve this, we have drawn from our own experience with the Planetary
305 Wellbeing Initiative,(11) as well as from previous calls for a cross-disciplinary collaboration in Planetary
306 Health. (2,13,14) with the assumption that the Anthropocene challenges we face are so complex that their
307 thorough examination and solution requires different scientific disciplines to work in alliance with each
308 other, something that requires the combination of efforts and knowledge from different disciplines, from
309 medicine to biology and climate science, from economics to political science and law, from the humanities
310 and culture to Technology (Khoo, S.-M 2019)”.In the current stage of the MSc in Planetary Health, the
311 diversity of disciplinary backgrounds is well established in the team of course instructors, in the academic
312 committee that supervised the design of the programme and the modules, and in the external advisory
313 committee who played a key role during the accreditation phase. However, adopting a wide multi-, inter-,
314 and transdisciplinary approach in a master degree involves a tension between the large diversity of theories,
315 concepts and methods and the degree of deepness that a master level requires. This tension was already
316 noted by the reviewers in the accreditation phase and will require a dedicated strategy throughout the master
317 implementation.

318 Postgraduate education provides a unique opportunity for students with different disciplinary backgrounds
319 to meet in interprofessional education programmes. (21) In our case, the multi-, inter-, and trans-
320 disciplinary approach in the educational programme allows students to share a common set of conceptual
321 models and to be exposed to a wide range of methods. This will strengthen their capacity to work alongside
322 colleagues from other disciplines throughout their careers. However, the adoption of a multi-, inter-, and
323 trans-disciplinary approach in a master degree involves some relevant challenges. One of them is to provide
324 students with additional contents to be able to follow those topics that are far from their own academic
325 background. Another very important challenge is to guarantee that all students receive an advanced
326 education level with a strong focus on research (instead of an introductory education to a wide subject’s
327 thematic range). To address these difficult issues, we are conducting targeted actions that require close
328 monitoring and evaluation of the MSc programme.

329 A potential limitation of the MSc as a current stage is the limited presence of local knowledge (e.g.,
330 traditional indigenous knowledge and local ecological knowledge) in the curricula. The inclusion of local
331 knowledge and ideas to navigate sustainability locally is in general poorly addressed within higher
332 education.(23) However, we believe that including this content in the curricula will emphasise the
333 importance of the human-nature relationship in other worldviews, as well as recognise the relevance of
334 traditional knowledge in monitoring changes in nature and in providing examples of successful adaptation
335 to these changes.(24–26) To address this issue, we will explore collaborations with indigenous scholars to
336 further integrate local knowledge in the MSc.

337 Universities and higher education institutions have a pivotal role in Planetary Health:(2) they have been
338 called to urgently embed the concept of planetary stewardship in all curricula.(5) In our strategy to include
339 Planetary Health in the university, we have maintained a sense of urgency as a core principle.(11) However,
340 dealing with the complexity of university bureaucracy and complying with the necessary academic
341 accreditation standards requires time and resources. For us, it was key to have a strong support from the
342 participating institutions. This allowed us to develop the programme, obtain the approval of the Spanish
343 academic system, elaborate and implement the initial learning resources, and recruit the first cohort of
344 students in about 2 years. We lacked the reference of any previous MSc in Planetary Health, which made
345 our task more challenging.

346 The motivation letters of our students show a strong desire for educational programmes that provide them
347 with academic training on relevant scientific knowledge and training to become planetary stewards. We
348 hope that our experience is useful and inspiring for other institutions to create similar programmes, which
349 would result in further opportunities for collaboration and mutual learning. Our goal is to generate a critical
350 mass of professionals with Planetary Health knowledge and values, willing and able to coordinate
351 interprofessional teams and to work effectively with cross-sector stakeholders to solve today's and
352 tomorrow's pressing challenges.

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470 **Tables**

471 **Table 1.** Organisation of the MSc in Planetary Health in relation to the domains defined in the Planetary Health educational framework.(13)

Thematic blocks	Modules	Main domain covered
Block 1: Concepts and methods	Planetary Health, the Response to Anthropocene Challenges	The anthropocene and Health
	Interdisciplinary Methods for Research in Planetary Health	Systems Thinking and Complexity
	Global and Multilevel Governance	Equity and Social Justice
Block 2: Challenges in Planetary Health	Food Systems	Understanding Interconnection within Nature
	Interdependence of Land Uses and Biodiversity with Health	
	Water Resources and Planetary Health	
	Global Pollution	
	Urbanisation and Sustainable Cities	
Block 3: Application of knowledge	Inclusive Solutions and Transformative Changes	Movement Building and Systems Change
	Research in Planetary Health: from Hypothesis to Research Protocol	
	Master's Thesis	

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473 **Table 2**

Competences and skills	Modules											
	1	2	3	4	5	6	7	8	9	10	11	12
Basic competences and skills												
CB6 – Gain and understand knowledge that forms the basis or an opportunity for original thinking in the development and/or application of ideas, typically in a research context.	x		x								x	x
CB7 – Capacity to apply the acquired knowledge and capacity for problem-solving in new or relatively unknown environments within broader (or multidisciplinary) contexts related to the field of studies.			x		x	x						x
CB8 – Capacity to integrate knowledge and tackle the complexity of formulating judgements based on incomplete or limited information, taking due consideration of the social and ethical responsibilities involved in applying knowledge and making judgements.	x			x	x	x	x	x	x			x
CB9 – Capacity to communicate conclusions and the knowledge and grounds on which they have been reached to specialist and non-specialist audiences in a clear and unambiguous manner.				x				x				x
CB10 – Learning skills that enable ongoing self-directed and independent learning.				x	x	x	x	x				
General competences and skills												
CG1 – Capacity to search for, analyse, assess and use information provided to make decisions in complex situations.	x	x			x	x	x					x
CG2 – Capacity to work in interdisciplinary teams to attain shared goals in relation to planetary health.		x			x		x			x		
CG3 – Capacity to apply creative thinking to contribute improvements or solutions in areas and situations of varied complexity in relation to planetary health.			x						x	x		x
CG4 – Capacity to resolve complex situations in a feasible, sustainable way, by analysing their components, finding alternatives, reaching consensus on their application and assessing the results of their implementation.												

Transversal competences and skills															
CT1 – Capacity to act in an honest, ethical, sustainable, socially responsible and respectful way considering human rights and diversity, both in academic and professional practice, and design solutions to improve these practices.		x	x										x	x	x
Specific competences and skills															
CE1 – Analyze the interaction between human health and the Earth's natural systems, using complex theoretical and conceptual models that relate the factors that promote environmental change, their effects on health, and allow for possible solutions to guarantee health in a sustainable way.	x			x	x	x	x	x	x	x					
CE2 – Design research projects and interventions, applying and integrating advanced knowledge on socioeconomic, political and / or cultural factors that interact affecting human health and promoting the degradation of natural systems.				x	x			x					x	x	
CE3 – Critically interpret, synthesize and integrate the results of quantitative and qualitative analysis from research in the main scientific disciplines related to Planetary Health (health sciences, natural and climate sciences, social sciences and economics).		x						x	x				x	x	
CE4 – Select and apply advanced methodologies and resources from different scientific disciplines in the field of Planetary Health to strategically solve complex situations and problems.	x													x	x
CE5 – Mastering the language and communicative conventions of the disciplinary fields of Planetary Health in order to act as an interlocutor in the professional field, formulating arguments and transmitting results and ideas in a clear and unambiguous way.		x	x						x	x					x
CE6 – Implement with initiative and autonomy research projects or interventions in the field of Planetary Health, integrating a multidisciplinary vision, transferring the main results to the actors involved.														x	x
CE7 – Critically evaluate and apply innovative proposals for solutions for the prevention, promotion and management of health with a multidisciplinary approach, taking into account environmental sustainability and equity.				x	x	x	x	x	x	x	x	x	x	x	x
CE8 – Formulate predictions about the evolution of health problems based on changes in natural systems, through innovative and multidisciplinary approaches that consider socioeconomic, political and / or cultural factors.	x	x	x	x						x					x

475 **Figures captions**

476 **Figure 1.** Description of the academic backgrounds of the first cohort of the MSc in Planetary Health (n=52)

477 **Figure 2.** Steps followed to define the programme and the actors involved in each step