

Supplementary Table 1. Respondents by Faculty, Discipline and Academic Title (n=41)

Faculty of Health Sciences	Disciplinary background	Academic title
Cape Peninsula University of Technology	Environmental Health Practitioner	Assoc. Professor
Durban University of Technology	Environmental Health Practitioner	Professor
Durban University of Technology	Nursing Professional	Lecturer
Durban University of Technology	Radiographer	Lecturer
Nelson Mandela University	Emergency Care Practitioner	Lecturer
Nelson Mandela University	Environmental Health Practitioner	Senior Lecturer
Northwest University	Nursing Professional	Senior Lecturer
Stellenbosch University	Medical Practitioner (MBChB)	Professor
Stellenbosch University	Medical Practitioner (MBChB)	Professor
Stellenbosch University	Nursing Professional	Lecturer
Stellenbosch University	Physiotherapist	Senior Lecturer
Stellenbosch University	Psychologist	Professor
Stellenbosch University	Public Health	Lecturer
Tshwane University of Technology	Environmental Health Practitioner	Senior Lecturer
University of Cape Town	Clinical Sciences & Immunology	Lecturer
University of Cape Town	Dentistry	Lecturer
University of Cape Town	Epidemiologist	Senior Lecturer
University of Cape Town	Medical Practitioner (MBChB)	Assoc. Professor
University of Cape Town	Medical Practitioner (MBChB)	Lecturer
University of Cape Town	Medical Practitioner (MBChB)	Senior Lecturer
University of Cape Town	Medical Practitioner (MBChB)	Senior Lecturer
University of Cape Town	Nursing Professional	Lecturer
University of Free State	Medical Practitioner (MBChB)	Professor
University of KwaZulu Natal	Medical Practitioner (MBChB)	Assoc. Professor
University of KwaZulu Natal	Medical Practitioner (MBChB)	Assoc. Professor
University of KwaZulu Natal	Medical Practitioner (MBChB)	Lecturer
University of KwaZulu Natal	Medical Practitioner (MBChB)	Professor
University of Limpopo	Nursing Professional	Senior Lecturer

University of Pretoria	Dentistry	Assoc. Professor
University of Pretoria	Environmental Health Practitioner	Senior Lecturer
University of Pretoria	Epidemiologist	Assoc. Professor
University of Pretoria	Medical Practitioner (MBChB)	Professor
University of Pretoria	Medical Practitioner (MBChB)	Senior Lecturer
University of Pretoria	Occupational Therapist	Lecturer
University of Pretoria	Physiotherapist	Assoc. Professor
University of South Africa	Nursing Professional	Professor
University of the Western Cape	Pharmacy	Senior Lecturer
University of the Western Cape	Physiotherapist	Assoc. Professor
University of the Witwatersrand	Dentistry	Senior Lecturer
University of the Witwatersrand	Rural Health	Lecturer
University of Zululand	Nursing Professional	Assoc. Professor

Supplementary Table 2. Learning Activities Related to Planetary Health and Sustainable Healthcare by Faculty (n=18 courses)

Faculty	Department / Division/School	Course	Topics or Themes	Programmes offering the course	Years of study	Learning OUTCOMES	Learning OBJECTIVES	Learning Activities
Durban University of Technology	Community Health Studies	Bachelor of Health Science: Environmental Health	Don't know	Environmental Health Practitioner	Year 1, Year 2, Year 3, Year 4	Yes	Yes	Writing assignments on SH topics. Oral presentations on SH topics.
Nelson Mandela University	Environmental Health	Sustainable development	Don't know	Environmental Health Practitioner	Year 1	No	Yes	Writing assignments on SH topics. Oral presentations on SH topics.
Stellenbosch University	Physiotherapy and Global Health	Becoming a Healthcare Professional	Action for Health, Global health	Dietetics & Nutrition, Physiotherapy Nursing	Year 1, Year 2, Year 3, Year 4, POST-GRADUATE	Yes	Yes	Role-plays /real patients: take a history of environmental risk exposure; advise about environmental & health co-benefits of lifestyle choices. Oral presentations on SH topics.

Stellenbosch University	Family Medicine and Primary Care	Planetary Health	Environmental stewardship	Medical Practitioner (MBChB), COPC	Year 1, Year 2, Year 3, POST-GRADUATE	Yes	Yes	Role-plays /real patients: take a history of environmental risk exposure; advise about environmental & health co-benefits of lifestyle choices. Writing assignments on SH topics. Community-based research about key environmental determinants of health. Concept mapping the relationships between the environment, disease, & healthcare. Debating ecological justice / eco-ethics / eco-advocacy by health professionals. Reflections on personal / professional eco-ethical challenges.
Tshwane University of Technology	Nursing Department	Nursing Science	Don't know	Dental Practitioner, Environmental Health Practitioner, Medical Technologist, Radiography	Year 1, Year 2, POST-GRADUATE	Yes	Yes	Don't know
University of Cape Town	Pathology	Integrated Health Systems	Climate Change and Health	Medical Practitioner (MBChB)	Year 3	Yes	Yes	Don't know

University of Cape Town	School of Public Health & Family Medicine	Health in Context	Climate change, Environmental Health	Medical Practitioner (MBCChB)	Year 4	Yes	Yes	Role-plays /real patients: take a history of environmental risk exposure; advise about environmental & health co-benefits of lifestyle choices. Community-based research about key environmental determinants of health. Designing a public health strategy to address environmental health impacts.
University of Cape Town	School of Public Health & Family Medicine	Masters in Public Health	Climate change, Pollution, and Health	Multidisciplinary programme	POST-GRADUATE	Yes	Yes	Writing assignments on SH topics. Interviews with environmental health stakeholders. Class presentations of topical climate and health media stories.
University of Free State	Community Health	M.Med. (Community Health)	Don't know	Medical Practitioner (MBCChB)	POST-GRADUATE	Yes	Yes	Role-plays /real patients: take a history of environmental risk exposure; advise about environmental & health co-benefits of lifestyle choices. Writing assignments on SH topics. Oral presentations on SH topics. Community-based research about key environmental determinants of health. Designing a public health strategy to address environmental health impacts. Concept mapping the relationships between the environment, disease, & healthcare.
University of KwaZulu Natal	Public Health Medicine	Masters in Public Health	Climate Change and Public Health	Multidisciplinary programme	POST-GRADUATE	Don't know	Yes	Oral presentations on SH topics.

University of KwaZulu Natal	Occupational and Environmental Health	Postgraduate Diploma in Occupational Health	Environmental Health	Multidisciplinary programme	POST-GRADUATE	Yes	Yes	Oral presentations on SH topics. Debating ecological justice / eco-ethics / eco-advocacy by health professionals.
University of KwaZulu Natal	Occupational and Environmental Health	Becoming a Professional	Climate Change and Public Health	Medical Practitioner (MBChB)	Year 1	Yes	Yes	Oral presentations on SH topics. Community-based research about key environmental determinants of health.
University of Pretoria	Physiotherapy	Integrated Health Leadership	Environmental Sustainability in Health Care	Physiotherapy	Year 4	Don't know	Don't know	Don't know
University of Pretoria	School of Health Systems and Public Health	Social Determinants of Health	Environmental Determinants of Health	Masters of Public Health	POST-GRADUATE	Yes	Yes	Community-based research about key environmental determinants of health.
University of Pretoria	School of Health Systems and Public Health	Basis of Environmental Health	Don't know	Masters of Public Health	POST-GRADUATE	Yes	Yes	Writing assignments on SH topics. Oral presentations on SH topics.
University of South Africa	Health Studies	Health and the Environment	Health and the environment	Health studies, Environmental sciences and open to	Year 1	Yes	Yes	Don't know

other
disciplines

University of the Western Cape	Interprofessional Education Unit	Health, Development and Primary Health care, Interdisciplinary Health promotion	Determinants of Health, Development, Engaging Communities/Community Profile	Dentistry, Oral Health, Dietetics and Nutrition, Occupational Therapy, Physiotherapy, Nursing, Social Work, Sport Recreation and Exercise Science, Natural Medicine	Year 1, Year 2,	Yes	Yes	Community Profile assignment which includes environmental determinants of health. Project implementation in primary schools including environmental determinants of health.
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University of the Witwatersrand	Family Medicine and Primary Care	Masters in Rural Health	Rural Health Context, Quality improvement, Community Orientated PHC, Burden of Disease, Developing appropriate services	Masters in Public Health	POST-GRADUATE Year 1, Year 2, Year 3	Yes	Yes	Role-plays /real patients: take a history of environmental risk exposure; advise about environmental & health co-benefits of lifestyle choices; advise about 'eco-friendly' treatment options. Oral presentations on SH topics. Community-based research about key environmental determinants of health. Designing a public health strategy to address environmental health impacts. Concept mapping the relationships between the environment, disease, & healthcare. Debating ecological justice / eco-ethics / eco-advocacy by health professionals. Reflections on personal / professional eco-ethical challenges. Quality improvement projects. Research projects
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Supplementary Table 3. Assessments related to Planetary Health and Sustainable Healthcare by Faculty (n=9 courses)

Faculty	Department / Division / School	Course	Debates with a rubric	Concept mapping	Discussion about eco-ethical care	Individual essay / reflections	MCQs or SAQs on core topics	Oral presentations with a rubric	OSCE: environmental history taking	OSCE: SH advice to patients	Environmental history & SH advice	Peer feedback on presentations	Project supervisor assessment report	Research report / presentation	Role plays	Written assignments with a rubric
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Stellenbosch University	Family Medicine and Primary Care	Planetary Health	S	F	S	F	F	F	DK	DK	F	S	DK	S	F	N
Tshwane University of Technology	Nursing Department	Nursing Science	F, S	DK	F, S	F	DK	F	S	DK	DK	F	S	S	F	S
University of Cape Town	School of Public Health & Family Medicine	Health in Context	N	N	F	F	S	F	N	N	F	N	Maybe	N	F	N
University of Cape Town	School of Public Health & Family Medicine	Masters in Public Health	N	N	N	N	N	N	N	N	N	N	N	N	N	S
University of Free State	Department of Community Health	MME D (Community Health)	S	S	N	F	F	F	N	N	N	S	F	F	N	F

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University of KwaZulu Natal	Public Health Medicine	Becoming a Professional	N	N	N	S	S	S	N	N	N	N	N	N	N	N
University of Pretoria	School of Health Systems and Public Health	Basis of Environmental Health	N	N	N	F	S	F	N	N	N	N	N	N	N	F
University of the Western Cape	Interprofessional Education Unit	Health, Development and Primary Health care, Interdisciplinary Health promotion	N	F	F	F	N	F	N	N	N	F	F	F	F	F

University of Witwatersrand	School of Public Health & Family Medicine	Health in Context	N	N	N	F	S	F	N	N	N	S	S	S	N	F, S
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F= Formative; S = Summative; N = None; DK = Don't know

Supplementary File. Survey questionnaire

National Audit of Education for Sustainable Healthcare 2021

Dear Participant

Thank you for your interest in this national curriculum audit of Education for Sustainable Healthcare (ESH).

Your participation will contribute to a better understanding of the status of ESH in all faculties of health sciences in South Africa, so as to better prepare health professional graduates as leaders of change for sustainable healthcare.

The 2020 AMEE Consensus Statement has defined ESH as educating health science students and health workers about the interdependence of human health, climate change, and planetary ecosystems; and how to mitigate environmental impacts of healthcare by making health systems more environmentally sustainable [Shaw, Walpole et al. 2020]

The following LEARNING OUTCOMES for ESH have been adopted in the Consensus Statement and apply to this audit:

1. Describe how the environment and human health interact at different levels.
2. Demonstrate the knowledge and capabilities needed to improve the environmental sustainability of health systems, using systems thinking
3. Discuss how the duty of health professionals to protect and promote health is impacted by the interdependence of health and ecosystems, and the implications for their personal and professional lives

This audit therefore seeks data on courses offered by your faculty that are designed to achieve these broad Learning Outcomes.

The questionnaire is divided into the following Sections:

- SECTION 1 & 2: Personal Information about yourself
- SECTION 3: Characteristics of the course with content about Sustainable Healthcare
- SECTION 4: Information about Assessments of Sustainable Healthcare content in the course
- SECTION 5: Information for follow-up on your interest in ESH

NOTES:

Sections 3 & 4 require a separate response for each eligible course. However, you may opt out in Q 5.1 from submitting responses for multiple eligible courses if you are unwilling or unable to.

Q5.2 requests that you email me the 2021 Faculty course prospectus / yearbook, or document/s describing the relevant course characteristics to facilitate any further data extraction and validation. Your agreement would be much appreciated.

The questionnaire may therefore take between 5 and 15 minutes to complete, depending on the data "density" of your response or multiple responses. To make data entry quicker, most questions are multiple choice/ checklists, and sections may be easily skipped if not applicable.

INFORMED CONSENT:

- Your participation is entirely voluntary, and you may withdraw at any time without any consequences.
- There are no anticipated risks, and no remuneration nor direct benefits, from participating.
- Your identity will not be disclosed to others, except to any fellow participants at your faculty.
- Personal identifying information is collected for analysis of course data by pre-defined demographic sub-groups. These data will be de-identified in the analyses in accordance with the POPIA Industry Code of Conduct for Research at Public Universities (https://www.usaf.ac.za/wp-content/uploads/2020/09/USAf-POPIA-Guideline_Final-version_1-September-2020.pdf)
- All participants are offered co-authorship on a journal paper about this audit, and membership of the ESH Special Interest Group of SAAHE. Please indicate acceptance in your survey response to Q5.3 & Q5.5

This study has been approved by the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee (HREC 358_2021). Please contact Professor Marc Blockman, Chair of the HREC (marc.blockman@uct.ac.za) with any queries about your rights as a research participant.

Thank you

JAMES IRLAM

James.Irlam@uct.ac.za

*PhD researcher & Senior Lecturer: UCT Division of Environmental Health & PHC Directorate
Convener: Education for Sustainable Healthcare (ESH), Southern African Association of Health
Educationalists (SAAHE) (saahe.org.za/education-for-sustainable-healthcare/)
TWITTER @Esh_Southafrica*

Section 1 of 5

INFORMED CONSENT: I hereby acknowledge and understand the conditions for participating in the research study. I have had the opportunity to ask questions and have had these questions answered. I understand that my participation is voluntary and that I am free to withdraw at any stage without consequence. I agree to have my response data used anonymously for purposes of the study.

1.1 What is your name?

1.2 Have you submitted a response previously?

Yes - skip Personal Information and go to Section 3

No - please continue below

Section 2 of 5

2. Personal Information

These data will be de-identified in the analyses in accordance with the POPIA Industry Code of Conduct for Research at Public Universities

2.1 At which health sciences faculty are you employed?

- 1.Cape Peninsula University of Technology
- 2.Central University of Technology
- 3.Durban University of Technology

- 4.Mangosuthu University of Technology
- 5.Nelson Mandela University
- 6.Northwest University
- 7.Rhodes University
- 8.Sefako Makgatho University
- 9.Stellenbosch University
- 10.Tshwane University of Technology
- 11.University of Cape Town
- 12.University of Fort Hare
- 13.University of Free State
- 14.University of Johannesburg
- 15.University of KwaZulu Natal
- 16.University of Limpopo
- 17.University of Pretoria
- 18.University of South Africa
- 19.University of the Western Cape
- 20.University of the Witwatersrand
- 21.University of Venda
- 22.University of Zululand
- 23.Vaal University of Technology
- 24.Walter Sisulu University

2.2 What is your disciplinary background (as registered with the HPCSA or SANC)?

- 1.Audiologist / Hearing Therapist
- 2.Clinical Associate
- 3.Clinical Technologist
- 4.Dental Practitioner
- 5.Dietician
- 6.Emergency Care Practitioner
- 7.Environmental Health Practitioner
- 8.Medical Practitioner (MBCbB)
- 9.Medical Technologist
- 10.Nursing Professional
- 11.Nutritionist
- 12.Occupational Therapist
- 13.Optomtrist
- 14.Physiotherapist
- 15.Psychologist
- 16.Radiographer
- 17.Speech & Language Therapist
- 18.OTHER - please specify below

2.2.1 Please specify any OTHER personal Disciplinary Background

2.3 What is your job title?

- 1.Professor
- 2.Assoc. Professor
- 3.Senior Lecturer
- 4.Lecturer
- 5.Asst. Lecturer
- 6.Research scientist

7.OTHER - please specify below

2.3.1 Please specify any OTHER Job Title

2.4 How does your job relate to environmental health or sustainable healthcare?

2.5 How many courses are you aware of that contain content about sustainable healthcare? (i.e. the interdependence of human health, climate change, and planetary ecosystems; and making health systems more environmentally sustainable)

None - skip to Section 5

1

2

3

4

5

More than 5

Section 3 of 5

3. Characteristics of each course with Sustainable Healthcare content

Please complete this section for each course that contains content about Sustainable Healthcare (i.e. the interdependence of human health, climate change, and planetary ecosystems; and making health systems more environmentally sustainable). If you are uncertain whether a particular course is eligible, please rather include it.

3.1 Name of Department offering course

3.2 Name of Course.

3.3 Course Code (enter XX if you don't know)

3.4 Name of Content Topic or Theme (enter XX if you don't know, or NA if not applicable)

3.5 Which Programmes (as registered with HPCSA) offer the course? [Select all that apply]

Audiology / Hearing Therapy

Clinical Associate

Clinical Technologist

Dental Practitioner

Dietetics and Nutrition

Emergency Care

Environmental Health Practitioner

Medical Practitioner (MBChB)

Medical Technologist

Occupational Therapy

Optometry

Physiotherapy

Psychology

Radiography

Speech & Language Therapy

Other...

3.6 In which year/s of study is the course offered? [Select all that apply]

Year 1

Year 2

Year 3

Year 4

Year 5

Year 6

POST- GRADUATE

DON'T KNOW

Please consult the available course prospectus / course outline, or similar document, for the course learning outcomes, learning objectives, learning activities, and details of formative & summative assessments as requested below. Please email these document/s to me if possible (James.Irlam@uct.ac.za)

3.7 Are the course learning OUTCOMES described? (i.e. the specific questions that the convener wants the course to raise)

Yes

No

Don't know

3.8 Are the course learning OBJECTIVES described? (i.e. the specific, measurable knowledge & skills that the student will gain)

Yes

No

Don't know

Course LEARNING ACTIVITIES related to SUSTAINABLE HEALTHCARE (SH) content.
Please consult the available course prospectus / course outline, or similar document.

3.9 Does the course have any of the following LEARNING ACTIVITIES related to SUSTAINABLE HEALTHCARE (SH)? [Select all activities that apply]

3.9.1. Role-plays /real patients: take a history of environmental risk exposure.

3.9.2. Role-plays /real patients: advise about environmental & health co-benefits of lifestyle choices.

3.9.3. Role-plays /real patients: advise about "eco-friendly" treatment options.

3.9.4. Writing assignments on sustainable healthcare topics

3.9.5. Oral presentations on sustainable healthcare topics

3.9.6. Community-based research about key environmental determinants of health

3.9.7. Minimising unnecessary and high environmental impact diagnostic tests & interventions

3.9.8. Designing a public health strategy to address environmental health impacts.

3.9.9. Concept mapping the relationships between the environment, disease, & healthcare

3.9.10. Debating ecological justice / eco-ethics / eco-advocacy by health professionals

3.9.11. Reflections on personal / professional eco-ethical challenges

3.9.12. OTHER - please specify below.

3.9.13 DON'T KNOW

3.9.14 NONE

3.9.12.1 Please specify any OTHER Learning Activities related to the SUSTAINABLE HEALTHCARE (SH) content of the course.

3.10 Does the course include any Formative or Summative assessment of the SUSTAINABLE HEALTHCARE (SH) content only?

Yes - continue below.

No - skip to Section 5

Don't know - skip to Section 5

Section 4 of 5

4. Assessments of Sustainable Healthcare content in each course

Please complete this section for each course that contains content about Sustainable Healthcare (i.e. the interdependence of human health, climate change, and planetary

ecosystems; and making health systems more environmentally sustainable), and in which that content is assessed.

4.1 Select ALL forms of Formative and/ or Summative assessment of the Sustainable Healthcare (SH) content ONLY [Select at least one response per row]

	FORMATIVE	SUMMATIVE	Don't know	None
4.1.1. Assessments of debates with a rubric				
4.1.2. Assessments of concept mapping exercise				
4.1.3. Group discussion about eco-ethics in clinical care				
4.1.4. Individual essay / reflections on learning				
4.1.5. MCQs or SAQs on core topics				
4.1.6. Oral presentations with a rubric				
4.1.7. OSCE station: environmental history taking				
4.1.8. OSCE station: SH advice to patients				
4.1.9. Patient consults that include enviro. history taking & SH advice				
4.1.10. Peer feedback on oral presentations				
4.1.11. Project supervisor assessment reports				
4.1.12. Research report / presentation / journal article				
4.1.13. Role plays				
4.1.14. Written assignments with a rubric				
4.1.15. OTHER - please specify below				

4.1.15.1 Please specify any OTHER Assessments of the SUSTAINABLE HEALTHCARE (SH) content of the course.

[Section 5 of 5](#)

5. Information for follow-up

This information will be used for follow up if you wish to be involved in further work on ESH in South African health science faculties

5.1 If there are additional eligible courses with content about Sustainable Healthcare, are you willing to submit another response about it?

There are NO additional eligible courses.

There are additional eligible courses, but I do NOT want to submit another response.

Yes, there are additional eligible courses & I will submit another response.

5.2 Can you email me the 2021 Faculty course prospectus / yearbook, or document/s describing the relevant course characteristics? (James.Irlam@uct.ac.za)

Yes

No

Other...

5.3 Would you like to be a contributing author on an academic paper about this audit?

Yes

No

Maybe

5.4 Can you suggest any other participants in this audit? If YES, please list their names, job titles, and email addresses.

5.5 Would you like to be added to the membership list of the ESH Special Interest Group of SAAHE (saahe.org.za/education-for-sustainable-healthcare/)?

Yes

No

Maybe

5.5 Do you have any further comments or queries?

THANK YOU FOR YOUR RESPONSE

Networks used for dissemination of th