

A Stocktake of Climate Adaptation Learning Programmes Currently Available in New Zealand



June 2024

A report by Coastal Management Collective Ltd, on behalf of the Aotearoa Climate Adaptation Network, for the Ministry for the Environment

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Cover photo: Participants at the 3rd Annual Aotearoa Climate Adaptation Network hui in Christchurch 2023. Source: Tom FitzGerald

Version: Final

Date: 25 June 2024

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This report should be referenced as: Farrell JA, Farrell JR, FitzGerald TM. 2024. A stocktake of climate adaptation learning programmes currently available in New Zealand (report prepared for the Ministry for the Environment). Coastal Management Collective.



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Table of Contents

1	INTRODUCTION	6
2	METHODOLOGY	7
2.1	Outline of Methodology Used	7
2.2	Adaptation Definition	8
2.3	Relevance Criteria	8
2.3.1	Relevance to Definitions of Climate Adaptation	8
2.3.2	Relevance to Adaptation Process.....	9
2.4	Search Methodology	11
3	DISCUSSION	12
3.1	New Zealand Tertiary Institutions	12
3.2	International Universities	14
3.3	Professional Organisations.....	15
3.4	Summary of Key Findings	16
4	NEXT STEPS	17
5	CONCLUSION	19
6	RECOMMENDATIONS	21
7	REFERENCES	22
8	APPENDICES	23

EXECUTIVE SUMMARY

The complexity of climate change issues and the multi-discipline cross-sectoral nature of climate change adaptation has resulted in a broad range of professions being called upon to integrate climate adaptation principles and practices into their work. When the diverse relationships between climate adaptation and other organisational and community processes are also given consideration, the depth and breadth of the challenges to develop a successful comprehensive qualification framework for adaptation practitioners becomes apparent.

In addition to a broad understanding of the basics of climate change processes, competent practitioners also require in-depth knowledge of how to develop, implement, monitor and review climate adaptation strategies.

This research has identified that programmes of learning on offer at tertiary level, both within New Zealand and internationally, provide a broad range of climate change foundational courses and papers. However, a very limited number of courses and papers exist that respond to the more specialised knowledge required to successfully develop, deliver, and review climate adaptation strategies.

Although many professional organisations provide climate change professional development support to members via a range of delivery mechanisms, there appears to be little collaboration between member organisations and no courses were identified that were linked to the New Zealand Qualifications Framework.

Next steps to developing a climate adaptation professional development programme include:

- Develop a competency framework for climate adaptation professionals as the next first step.
- Encourage and support cross-sector collaboration.
- Confirm the existing practitioner qualification base and preferences for professional development.
- Develop a flexible and agile New Zealand Qualifications Authority-recognised qualification framework that contains multiple qualification pathways and that recognises the diversity and breadth of climate adaptation work content.
- Develop an accreditation framework for adaptation practitioners.
- Identify and support administration of an accreditation programme for adaptation professionals.

1 INTRODUCTION

Action 3.29 of Aotearoa’s first National Adaptation Plan (2022) requires the Ministry for the Environment (MfE) to produce an adaptation professional development programme for key audiences between 2025-2027. This action will *“target building capability and help circulate new tools and guidance among different audiences. It will encourage uptake and effective use by practitioners and others working on climate adaptation.”*¹

Acknowledging that there is a range of uncertainties in the scale and timing of climate change impacts and their associated climate risks, vulnerabilities, and the temporal and spatial delivery of local adaptation initiatives, climate change adaptation requires ongoing processes of learning and capability building.

In addition, due to the complexity of climate change issues and the cross-functional and cross-sectoral nature of climate adaptation, a broad range of professions are being called on to integrate climate adaptation principles and practices into their work. People on the front lines of planning, communicating, and implementing climate action policies, plans, and strategies, include scientists, planners, engineers, biologists, community engagement professionals, kaitiaki, landscape architects, architects and designers, accountants, risk managers, asset managers, policy advisors, and decision-makers. These roles are spread across the private sector, all levels of the public sector and within the volunteer sector. Bringing together these many disciplines and the requirements for a diverse range of skills, climate adaptation is increasingly being recognised as an emergent profession.

To accommodate the uncertainties, to respond to new research, and for adaptation professionals to be able to successfully practice in this environment, professional development programmes must be agile and accessible so that climate adaptation practitioners incorporate and apply the latest learnings and improved practices in the delivery of climate adaptation programmes within their organisations and within local communities. In so doing, local and national efficiencies will be achieved as will improved community climate resilience to future events. New Zealanders will also be able to have confidence that those entrusted with enabling and making decisions about the way we live in a climate-charged future are equipped with a nationally consistent baseline level of expertise. As has happened in many other professional disciplines, this engenders trust in the profession and helps build social license in tackling the challenges of climate adaptation.

To produce an adaptation professional development programme that builds climate adaptation capability and capacity within New Zealand, an important key first step to providing a solid

¹ National Adaptation Plan, p.61.

foundation is to understand what professional development programmes currently exist, together with their content (a 'stocktake').

This report identifies the current state-of-play of professional climate adaptation learning programmes available in New Zealand. It provides information on course providers, the range of courses offered, and the depth and breadth of course content provided by 46 tertiary institutions and New Zealand professional organisations. Learning programmes from 16 selected international case studies are also examined for comparative purposes. Gaps and opportunities are similarly identified.

Early insight into the current courses and papers on offer will provide an informed approach to the development of a structured framework for a professional development programme that enhances climate adaptation capability and capacity within New Zealand communities.

This report provides a starting benchmark for a programme that can be progressed in accordance with NAP timelines.

2 METHODOLOGY

2.1 Outline of Methodology Used

The methodology adopted for this project involved:

- i. Identifying a credible definition of climate adaptation.
- ii. Creating a set of criteria to evaluate the relevance of programmes of learning against the definition of climate adaptation.
- iii. Using key words, identifying climate adaptation programmes of learning² through online research of tertiary institutions in New Zealand and internationally, and of a selection of New Zealand professional organisations.
- iv. For tertiary institutions, evaluating the relevancy of research findings:
 - a. Against the definition of climate adaptation.
 - b. Against the 5 Steps of the Ministry for the Environment Climate Change Adaptation Process³.
- v. For professional institutions, a qualitative assessment of website content.

² For the purposes of this report, due to the lack of specific courses on climate adaptation and the fact that climate adaptation sits across multiple disciplines, 'programmes of learning' include both courses and individual papers that can be cross-credited.

³ Ministry for the Environment. 2021. *He kupu ārahi mō te aromatawai tūraru huringa āhuarangi ā-rohe / A guide to local climate change risk assessments*. Wellington: Ministry for the Environment (p.9).

2.2 Adaptation Definition

The 2022 Sixth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC) defines 'Adaptation' as:

*"In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects."*⁴

A complementary but more succinct definition of 'Adaptation' is provided by the Global Centre on Adaptation:

*"Climate adaptation means taking action to prepare for and adjust to the current and projected impacts of climate change."*⁵

Both of these definitions of 'Adaptation' were considered in identifying and evaluating online professional learning programmes.

2.3 Relevance Criteria

2.3.1 Relevance to Definitions of Climate Adaptation

One of the substantive challenges of this research has been managing the high level of variability in the way tertiary institutions and professional organisations make course and paper information available on their websites. Although this was anticipated when comparing New Zealand universities against international universities, it was surprising that there was so little consistency amongst New Zealand tertiary institutions, particularly as they all operate under the New Zealand Qualifications Framework. The import of this is threefold.

Firstly, although the research identified a large number of courses and papers, other courses/papers will exist. The courses and papers reported on and included in the Appendices should therefore be considered as a sample of courses and papers available rather than a complete record.

Secondly, the high level of inconsistency between universities makes it difficult for students seeking to study climate adaptation to make informed comparative analyses between the

⁴ https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf (p.2898)

⁵ <https://gca.org/what-is-climate-adaptation/>

course/paper offerings of the different tertiary institutions, and therefore determine which tertiary institution provides the better option for their preferred study programme.

Lastly, a methodology was required to be developed to inform a judgement on the relevancy of courses/papers relative to the definitions of climate adaptation set out in the preceding section. Table 1 outlines the 5-tier evaluation framework that was developed (1 being low relevance to 5 being high relevance) and applied to identified courses/papers.

Rating	Description
5	These courses or papers are focused on climate adaptation. Climate adaptation features strongly in the learning intentions (course outlines) of these courses.
4	These courses or papers have a high degree of relevance to understanding climate adaptation and range from legal, ethical, scientific, through to societal perspectives.
3	The content of these papers/courses contain one or more aspects of information essential for practitioners to be able to practise successfully in the field of climate adaptation.
2	These courses and papers contain specific foundational information that helps practitioners research, plan for, monitor and understand climate adaptation.
1	These courses or papers contain general information that provide broad background information about climate change and climate adaptation.

Table 1 Adaptation definition relevance rating criteria

Allocating an adaptation relevancy rating based on website descriptions of learning intentions involves a degree of researcher subjectivity. To minimise this effect, the rating evaluations have been moderated by a sub-committee of Aotearoa Climate Adaptation Network members.

2.3.2 Relevance to Adaptation Process

In addition to understanding the relevancy of climate change courses to the IPCC and Global Centre on Adaptation definitions of ‘Adaptation’, an alternative evaluation was undertaken against the individual steps of the MfE’s ‘Climate Change Adaptation Process’ (Adaptation Process)⁶. The purpose of this evaluation was to identify which of the steps in the Adaptation Process were supported with tertiary-provided knowledge programmes and conversely, whether any steps were not covered in learning programmes currently provided by tertiary institutions and professional organisations. The five-step Adaptation Process is depicted in Figure 1.

⁶ Ministry for the Environment. 2021. *He kupu ārahi mō te aromatawai tūraru huringa āhuarangi ā-rohe / A guide to local climate change risk assessments*. Wellington: Ministry for the Environment (p.9).



Figure 1 Climate Change Adaptation Process

The Adaptation Process detailed in Figure 1 reflects a typical cyclical adaptation process. Variations on this process are used globally across multiple settings and are scalable from national to regional to local. Examples of its use include Canada’s National Adaptation Strategy⁷, European Union’s Climate Adaptation Support tool⁸, New South Wales Climate Risk Ready NSW Guide⁹, and NIWA’s Climate Change Adaptation Toolbox¹⁰.

For the Adaptation Process to be a successful climate adaptation framework, all steps in the process must be successfully implemented. Steps 3, 4 and 5 of the Adaptation Process should integrate into broader organisational and community strategic planning and decision-making frameworks such as local government Long Term Plans, Spatial and District Plans, Asset Management Plans, and Infrastructure and Financial strategies.

⁷ <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy/full-strategy.html#toc3>

⁸ <https://climate-adapt.eea.europa.eu/en/knowledge/tools/adaptation-support-tool>

⁹ <https://www.climatechange.environment.nsw.gov.au/how-adapt/state-government/how-state-government-can-adapt>

¹⁰ <https://niwa.co.nz/climate-and-weather/climate-change-adaptation-toolbox>

In the future, a combination of legislative change and market pressures from registered banks, licensed insurers, and registered investment providers, is likely to drive organisational financial reporting of climate risks together with associated strategies to reduce those risks. These changes should generate greater impetus for organisations to demonstrate how all steps in the Adaptation Process have been given consideration in organisational decision-making. A competent workforce across all steps in the Adaptation Process will be required to meet this new dynamic.

The diverse relationships between climate adaptation and other organisational and community processes highlights the cross-disciplinary nature of climate adaptation. This in turn signals the breadth of the associated challenges to be addressed in developing a successful comprehensive qualification framework for adaptation practitioners.

2.4 Search Methodology

An initial screening search of websites used the terms: '*climate change*' and '*climate change adaptation*'. The screening searches were followed by further searches using the following terms: '*climate change adaptation courses*', '*climate change adaptation subjects*', '*climate change adaptation papers*' and '*climate change adaptation units of work*'. The searches often led to courses and papers on resilience which suggests there is a degree of interchangeability between the terms 'adaptation' and 'resilience'.

For each tertiary institution, undergraduate and post-graduate courses were reviewed by looking specifically at individual papers offered in professional discipline areas. Discipline areas included: engineering, environmental science, law, politics, geography, finance/economics, philosophy and planning.

Where available, the learning intentions for each paper were reviewed to help inform the relevancy rating that should be allocated. At the same time, the New Zealand Qualifications Authority course/paper level was also recorded. The New Zealand Qualifications Framework Structure is summarised in Table 2.

Level	Qualification Types
10	Doctoral Degree
9	Master's Degree
8	Postgraduate Diplomas and Certificates Bachelor Honours Degree
7	Bachelor's Degree Graduate Diploma and Certificates
6	Diplomas
5	

4	Certificates
3	
2	
1	

Table 2 New Zealand Qualification Framework Structure – levels and qualification types

A total of 515 courses/papers from 40 New Zealand and international tertiary institutions were reviewed. These consisted of:

- 7 New Zealand universities (272 courses/papers);
- 2 Wānanga (8 courses/papers);
- 15 Polytechnics (79 courses/papers); and
- 16 Overseas universities (156 courses/papers).

In addition, websites of 22 professional organisations were explored for climate change educational content.

Evaluations against the definitions of ‘Adaptation’ and against the Climate Change Adaptation Process are summarised in Appendix A1 and detailed in full in Appendices A2 through to A12.

In evaluating the relevancy of courses and papers to the definitions of ‘Adaptation’, one score was allocated to each course/paper. This differed for the evaluation of courses and papers against the Climate Change Adaptation Process where, due to the content of many of the courses and papers applying to more than one step in the Adaptation Process, many courses and papers received multiple scores. This explains the discrepancy between the 515 total records of the Adaptation relevancy evaluation and the 679 total records of the Adaptation Process evaluation.

3 DISCUSSION

3.1 New Zealand Tertiary Institutions

This research indicates climate adaptation, as a specialist subject, has a low level of meaningful recognition amongst New Zealand tertiary institutions. Despite using reasonably narrow search criteria, only 5% (17) of climate change courses/paper learning intentions identified a **strong focus** on climate adaptation and a further 9% (34) of learning intentions having a **high degree of relevance** to climate adaptation. In contrast, 86% (308) course/paper learning intentions, i.e. Steps 1-3 of the Adaptation Process, are aimed at providing a broad range of knowledge

relating to climate change. A summary of the relevancy distribution of courses and papers is provided in Table 3.

Relevancy Rating	1 General information	2 Foundational information	3 One or more aspects of information essential for practitioners	4 High degree of relevance to understanding climate adaptation	5 Strong focus on climate adaptation
NZ Universities	97 (36%)	73 (27%)	58 (21%)	28 (10%)	16 (6%)
Wānanga	1 (13%)	1 (13%)	2 (25%)	3 (38%)	1 (13%)
Polytechnics	23 (29%)	36 (46%)	17 (22%)	3 (4%)	0 (0%)
Total	121 (34%)	110 (31%)	77 (21%)	34 (9%)	17 (5%)

Table 3 Relevancy of New Zealand tertiary institutions climate change courses to climate adaptation

When comparing the alignment of papers/courses with the Adaptation Process, the course and paper learning intentions are heavily weighted towards Steps 1 and 2 of the Process with 46% (272) of course learning intentions focusing on understanding the context, hazards and exposure (Step 1), and 24% targeting vulnerability and risk (Step 2). It is disconcerting that only 11% of papers offered at New Zealand tertiary institutions cover the development and implementation of climate adaptation strategies, and monitoring and reviewing their effectiveness. A summary of the findings is provided in Table 4.

Adaptation Process Step	1 Understand contexts, hazards and exposure	2 Assess vulnerability and risk	3 Identify and evaluate options and pathways	4 Develop and implement adaptation strategy	5 Monitor and review
NZ Universities	210 (47%)	104 (23%)	78 (17%)	38 (9%)	16 (4%)
Wānanga	5 (42%)	4 (33%)	3 (25%)	0 (0%)	0 (0%)
Polytechnics	57 (43%)	35 (27%)	29 (22%)	5 (4%)	6 (5%)
Total	272 (46%)	143 (24%)	110 (19%)	43 (7%)	22 (4%)

Table 4 Alignment of New Zealand tertiary institutions climate change courses to the MfE Climate Adaptation Process.

A more holistic approach to climate change learning programmes is apparent in the courses/papers provided by the two wānanga. More detailed understanding of the course content is required to determine whether this genuinely reflects a Te Ao Māori perspective on climate change by the wānanga in the delivery of their climate change programmes, or whether

the apparent breadth is due to other reasons such as the limited number of courses and papers touching on a broad range of matters lightly.

That online research was unable to identify a single climate adaptation-focused course at any New Zealand polytechnic is a significant finding of this research.

3.2 International Universities

Websites of 16 universities from Australia, South Pacific, Singapore, England, Scotland, USA, Singapore, China, the Netherlands, and South Africa were examined using the search criteria specified in s.2.4. Differing website designs combined with quite different course structures and paper descriptions made locating climate adaptation courses and papers particularly challenging. The courses and papers detailed in Appendix A11 should therefore be considered as samples only and not a complete inventory of climate adaptation courses and papers available from these universities.

In comparison with New Zealand universities, the international universities reviewed had a stronger emphasis at both ends of the climate adaptation relevancy scale. There was a greater percentage of papers aimed at delivering a broad understanding of climate change but there were also more than double the percentage of papers with a strong focus on climate adaptation than were available in New Zealand. The results are summarised in the following table.

Relevancy Rating	1	2	3	4	5
	General information	Foundational information	One or more aspects of information essential for practitioners	High degree of relevance to understanding climate adaptation	Strong focus on climate adaptation
International Universities	63 (40%)	36 (23%)	25 (16%)	14 (9%)	18 (12%)

Table 5 Relevancy of international universities' climate change courses to climate adaptation

It was a quite different situation however when the courses and papers offered by international universities were assessed against the Adaptation Process. Despite the limited number of courses and papers identified, it was evident the international course content had a strong focus on Step 1 of the Process, i.e. understanding the contexts, climate hazards and exposure, with minimal focus on developing and implementing an adaptation strategy (Step 4) or monitoring and reviewing its implementation (Step 5). The results of the international universities evaluation are summarised in Table 6 below.

Adaptation Process Step	1	2	3	4	5
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	Understand contexts, hazards and exposure	Assess vulnerability and risk	Identify and evaluate options and pathways	Develop and implement adaptation strategy	Monitor and review
International Universities	124 (56%)	52 (24%)	38 (17%)	4 (2%)	3 (1%)

Table 6 Alignment of international universities climate change courses to the MfE Climate Adaptation Process.

3.3 Professional Organisations

The professional organisations reviewed consisted primarily of member organisations with NIWA and the Building Research Association of New Zealand added to provide a perspective on educational climate adaptation information available from two New Zealand research institutions that have a strong climate and/or resilience-focus.

Whereas locating and identifying climate adaptation papers were significant challenges when reviewing New Zealand and international tertiary institutions, the major challenge with reviewing professional member organisation websites was accessing member-only course material.

A summary of website information of the 22 professional organisations are listed in Appendix A12¹¹. Examples of climate-related support offered to members includes short course online professional development (e.g. Engineering New Zealand, Local Government New Zealand, Civil Service Institute Aotearoa New Zealand), webinars (e.g. Chartered Accountants Australia & New Zealand), expert advice (e.g. New Zealand Law Society has established a Climate Change Law Committee).

In contrast, there was a considerable amount of quality climate adaptation educational material publicly available on the two research institution websites.

With the exception of the Civil Service Institute Aotearoa New Zealand IAP2 course, the short courses on the member organisation websites appear to have a broad climate change base (e.g. a 'Climate Change 101' type approach) covering both climate mitigation and adaptation, and typically contain links to other websites for more specific information. Although several courses have some form of certification, we could find no evidence of courses offered by New Zealand professional organisations to their members that were linked to the New Zealand Qualification Framework and thereby recognised by the New Zealand Qualifications Authority.

¹¹ We wish to acknowledge the support of Bryony Lane and Tania Williams of Engineering New Zealand in sharing their research on climate change programmes offered by New Zealand organisations.

This suggests there is likely to be a lack of consistency and quality between the climate courses offered by professional organisations to their members.

3.4 Summary of Key Findings

- From the course and paper learning intentions reviewed, 'climate change adaptation', as a specialist professional discipline, has a low level of recognition amongst tertiary institutions, both within New Zealand and internationally.
- Nationally, and internationally, the number of courses and papers available diminished for each sequential step in the MfE Climate Change Adaptation Process.
- Where adaptation was identified in climate change courses/paper learning intentions, a large majority of the material (86%) is based on general or foundational material, i.e. Steps 1-3 of the Relevancy Rating criteria.
- This focus on foundational material by tertiary institutions was reinforced when courses/papers were assessed against the MfE Climate Change Adaptation Process which requires a broad understanding of climate change information at Steps 1 and 2. The assessment against the Adaptation Process identified that 74% of the total papers reviewed, i.e. the combined total of New Zealand and international tertiary institutions, target these two steps in the Process. Step 1 requires an understanding of climate contexts, hazards and exposure and Step 2 involves assessing vulnerability and risk. The scores for these assessments were 46% NZ, 50% international for Step 1 and 24% for both NZ and international for Step 2.
- The step in the Adaptation Process with the next highest rating, for both New Zealand and internationally, was Step 3 (Identifying and evaluating options and pathways (19% NZ and 18% international)).
- New Zealand-available courses/papers scored higher against Steps 4 and 5 of the Adaptation Process than the courses available through the international tertiary institutions.
- Step 4 (developing and implementing an adaptation strategy (7% NZ, 2% international) and Step 5 (monitoring and review (4% NZ, 1% international)) of the Adaptation Process both scored very low in comparison to the three earlier stages of the Adaptation Process.
- Of the New Zealand universities, Auckland University provides 31% (80 papers) of the total number of adaptation courses/papers on offer. Massey University is second with 18% (46 papers), Victoria University third (17%, 43 papers), Waikato University fourth (13%, 33 papers), Canterbury University fifth (12%, 31 papers), Otago sixth (8%, 20 papers) and Lincoln University seventh (2%, 4 papers).
- When considering which of the New Zealand universities provides the broadest coverage of papers across the five steps in the Adaptation Process, Auckland University offers a considerably greater number of courses/papers at every step (Step 1 (30%, 64 papers) Step 2 (39%, 41 papers), Step 3 (37%, 29 papers), Step 4 (61%, 23 papers) and Step 5 (81%, 13 papers).

- Of the two wānanga, Te Whare Wānanga O Awanuiārangi is the more substantive provider of climate adaptation papers with content covering all five steps in the Adaptation Process. In comparison, Te Wānanga o Raukawa's two courses focus on Steps 3 and 4 of the Adaptation Process.
- No adaptation courses or papers were identified at Otago, Waikato Wintec, Wellington Weltec, Whitireia, Ara Canterbury or Manukau polytechnics.
- The polytechnic offering the most Adaptation courses and papers was Southern (20), followed by Eastern (13), Open Polytechnic of New Zealand (12), WITT Te Pūkenga and UNITEC (11 each), Toi Ohomai and Nelson Marlborough NMIT (4), NorthTech (3) and UCOL (1).
- Similar to the universities, the large majority of polytechnic course and paper learning intentions identified were targeted at providing foundational knowledge with 43% focusing on Step 1 of the Adaptation Process, 27% on Step 2, 22% on Step 3, with a substantial drop to 4% and 5% for Steps 4 and 5 respectively.
- Professional organisations have identified climate change as a matter that their members need to recognise as a matter for professional development and provide support to members via a range of delivery mechanisms. However, there appears to be little collaboration between member organisations and no courses were identified that were linked to the New Zealand Qualifications Framework. This is a constraining outcome of the member organisation professional development programmes identified in this research.
- Development of a climate adaptation professional development programme will require leadership, cross-disciplinary collaboration, commitment and funding. Options to develop such a programme, together with its potential institutional arrangements around structure and delivery mechanisms are beyond the scope of this report which is limited to a stocktake of currently available climate adaptation learning programmes offered by tertiary institutions and professional organisations.

4 NEXT STEPS

National Adaptation Plan Action 3.29 requires MfE to produce an adaptation professional development programme for key audiences by 2027.

Professional development involves gaining new skills through continuing education and career training and can take many forms.

Most professional discipline organisations require evidence of ongoing training to demonstrate competency in order to remain registered/accredited to practice. However, climate adaptation is not currently an established discipline in New Zealand and demonstrating competency in a specialist discipline such as law, engineering, planning, does not reflect competence in climate adaptation.

The Aotearoa Climate Adaptation Network (ACAN) Professional Development Survey (2023, unpublished) of 79 climate adaptation practitioners identified a wide range of professional qualifications held by practitioners in a wide range of roles. Although the complexity of individual roles does pose a challenge to standardising professionalism, ACAN survey participants identified a strong preference for New Zealand Qualification Authority-affiliated micro-credential type courses to enhance professional development. This flexibility should be an essential element of any proposed professional development programme.

In addition to wanting to build on existing qualifications, 83% of ACAN survey responses supported an overarching professional qualification framework for climate adaptation as a specialist subject with provision for both, a tertiary education pathway for school leavers, as well as a range of post-graduate study opportunities.

ACAN's pending evolution into the Aotearoa Society for Adaptation Practitioners (ASAP) as New Zealand's first and only professional society for climate adaptation practitioners will provide a professional 'home' for all practitioners undertaking climate adaptation mahi in New Zealand. As exists for ACAN, one of the strategic goals for ASAP is to build national adaptation practitioner competency and capability. Organisations including Engineering New Zealand, the New Zealand Planning Institute, and the Building Officials Institute of New Zealand have already expressed a willingness to collaborate with ACAN/ASAP in developing cross-discipline climate adaptation professional development resources. Future engagement with tertiary institutions will be necessary once a competency framework for adaptation practitioners has been finalised.

In response to ACAN member feedback, the resources developed by ACAN/ASAP will be used in professional development programmes that are linked to the New Zealand Qualifications Framework. In this way, participating members will receive formal recognition of learning through obtaining higher qualifications that are nationally/internationally recognised. There is an opportunity for MfE to leverage the collaborative professional development work programmes ACAN/ASAP is proposing.

To help guide a process to develop an adaptation professional development programme, the following list of key next steps is proposed, noting that some of which are able to be done in parallel:

- Develop a competency framework for climate adaptation professionals as the next first step.
- Encourage and support cross-sector collaboration.
- Confirm the existing practitioner qualification base and preferences for professional development.
- Develop a flexible and agile New Zealand Qualifications Authority-recognised qualification framework that contains multiple qualification pathways and that recognises the diversity and breadth of climate adaptation work content.
- Develop an accreditation framework for adaptation practitioners.

- Identify and support administration of an accreditation programme for adaptation professionals.

5 CONCLUSION

Skilled and experienced people are essential for addressing the complex strategic and operational challenges presented by climate change. Effective decision-making for adaptation needs to be informed by skilled use and good understanding of climate science and other relevant disciplines to ensure that resources are allocated efficiently, communities are educated and engaged, and policy and practice are well-informed.

Improving professionalisation, through establishing the criteria and standards for professional development and providing formal professional development processes will support development of national capability and capacity to tackle the complexities of climate adaptation more effectively and efficiently.

This stocktake of courses has identified that the importance of climate adaptation to society has a low level of recognition by both tertiary institutions in New Zealand, and by those overseas universities reviewed. Further, there is little appreciation that all of the steps involved in a climate adaptation process are important for climate adaptation initiatives to be successful.

There are significant gaps in climate change learning programmes currently on offer from New Zealand tertiary institutions. However, the research indicates this is not unique to New Zealand. Although the number of learning programmes start to drop away at Step 3 in the Adaptation Process (option identification and evaluation), there is a substantive diminution of programmes at the subsequent stages of the Process (implementation of adaptation programmes together with monitoring and review).

The very low number of courses and papers at Steps 4 and 5 of the Adaptation Process is likely reflective of climate adaptation being an emerging professional discipline combined with the nationally collective absence of proactive planned climate change risk reduction interventions. Unfortunately, nearly all historic risk reduction interventions within New Zealand have been reactive societal and political responses to substantive climate or other natural hazard events (e.g. seismic). This means there has been no real-world driver for tertiary institutions to develop programmes of learning to cater to proactive adaptation programmes as there has been no historic demand for the skill sets necessary to implement such programmes. New Zealand's international commitments to reducing disaster risk through its signatory status to the Sendai Framework for Disaster Risk Reduction 2015-2030 coupled with increasing information on the cost benefit advantages of investing in reducing natural hazard risk over the costs of emergency response and recovery, may provide the necessary impetuses for change.

The analyses undertaken herein provide compelling justification for Action 3.29 of Aotearoa's First National Adaptation Plan requiring MfE to develop, or to partner with other organisation(s) in the development of, an adaptation professional development programme.

A considerable amount of valuable information on climate adaptation (and mitigation) is publicly available from New Zealand research institutions, however this is significantly under-utilised. Ensuring this information reaches target audiences and is appropriately incorporated into programmes of learning should be a key objective of any adaptation professional development programme.

Systematic uplift in expertise and competence of individuals tasked with leading adaptation mahi is critical to ensuring Aotearoa has the best chance to adapt to the perils and opportunities posed by a changing climate.

Opportunities exist to utilise existing workforce information such as that held by ACAN, Engineering New Zealand and the New Zealand Planning Institute in developing a professional development programme for climate adaptation practitioners. Considerable efficiencies can be achieved through collaboration, coordination, and sharing of climate adaptation expertise. Sector leadership is required to see these opportunities realised in practice.

Lastly, a stratified approach to an adaptation professional development programme will provide the degree of flexibility necessary to build on existing sector capability and to provide a qualification pathway for school leavers.

6 RECOMMENDATIONS

The following recommendations are made:

1. That NAP Action 3.29 which has an allocated timeframe of 2025-2027 be brought forward to commence in the 2024-25 financial year. This will enable MfE to leverage, support, and influence the work the adaptation sector is already progressing.
2. That MfE support the establishment of a professional organisation for climate adaptation practitioners that can lead cross-sector collaboration and development of multi-discipline climate adaptation learning programmes within the Adaptation Development Framework, as well as administering an accreditation programme for climate adaptation practitioners.
3. That a practitioner-led project be funded to develop a competency framework for climate adaptation practitioners.
4. That a Taskforce of practitioners, tertiary education sector representatives, and representatives of climate-related Crown Research Institutions, be established to develop an enduring Adaptation Development Framework across levels 4 through to 10 of the New Zealand Qualifications Framework.
5. That MfE funds a practitioner-led programme to develop a set of adaptation tools together with a suite of guidance documents to create an immediate positive impact on adaptation capability. This recommendation recognises that establishing a professional development programme, and identifying and utilising levers of influence, will take some time to work through.
6. That MfE investigates how other mechanisms available to the Government, such as climate-related financial disclosures, might be used to escalate awareness of the need for specialist skills and competencies to be developed to cater to what will be an increasing demand to deliver climate adaptation interventions to local communities. Communicated appropriately, this initiative could readily influence the number of tertiary-level courses/papers available that fill the existing gap and cover Steps 3, 4, and 5 of the Adaptation Process.

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8 APPENDICES

Appendix A1 – Summary

Organisation (62)	Direct Relevance to Climate Adaptation Definition - Count of Course/Paper Rating Scores						Adaptation Process Assessment - Count of Papers/Process Step						
	1	2	3	4	5		1	2	3	4	5		
NZ Universities (7)													
Auckland	31	26	13	2	8		64	41	29	23	13		
Waikato	16	6	7	4			27	13	8	3	1		
Massey	17	12	11	5	1		36	20	17	2			
Victoria	13	15	10	4	1		36	10	8	5	1		
Canterbury	8	8	8	6	1		26	12	10	4			
Lincoln	1	1	1	1			3	3	2				
Otago	10	3	5	2			18	5	4	1	1		
Subtotal	97	73	58	28	16	272	Subtotal	210	104	78	38	16	446
%	36%	27%	21%	10%	6%		%	47%	23%	17%	9%	4%	
Wanganga (2)													
Te Whare Wānanga O Awanuiārangi Whakatane	1	1	1	2	1		3	3	2				
Te Wānanga O Raukawa			1	1			2	1	1				
Subtotal	1	1	2	3	1	8	Subtotal	5	4	3	0	0	12
%	13%	13%	25%	38%	13%		%	42%	33%	25%	0%	0%	
Polytechnics (15)													
Toi Ohomai		3		1			4	4	4				
Otago													
Southern	9	8	3				12	4	2	1			
Eastern	1	7	4	1			11	4	4	1	2		
Waikato WINTEC													
Wellington WelTec													
Nelson Marlborough NMIT	4						4	3	2				
Whitireia													
NorthTech			3				2	2	3	1	2		
WITT Te Pūkenga	4	6	1				10	6	4		2		
Ara Canterbury													
UCOL		1					1	1	1				
Open Polytechnic of NZ	3	7	1	1			7	4	4	2			
Manukau													
UNITEC	2	4	5				6	7	5				
Subtotal	23	36	17	3		79	Subtotal	57	35	29	5	6	132
%	29%	46%	22%	4%	0%		%	43%	27%	22%	4%	5%	
Summary of NZ Tertiary Institutions													
	121	110	77	34	17	359		272	143	110	43	22	590
%	34%	31%	21%	9%	5%		%	46%	24%	19%	7%	4%	

Overseas Universities (16)

Sydney University	14	11	11	3			31	17	13	1			
Oxford	2	3	1		3		9	5	3	2	1		
Cambridge University	4	1	1	3			7	2					
Imperial College		1	1	1			3	1	1				
National University of Singapore	1	3	3	3	1		10	4	3			1	
Tsinghua University, China	3						2						
Harvard	10	4		1	1		13	3	2				
Wageningen, The Netherlands	3	2			1		6	5	2				
Pacific TAFE		1			3		3	1					
University of the South Pacific	8	3	3		2		13	4	5	1		1	
ANU Australian National University	5	3		1	2		6	1	1				
MIT- Masseurachusetts Institute of Technology	10	3	2	1	1		13	6	4				
UNCC Short Courses	3	1	2		3		5	1	2				
University of Cape Town Short Course					1		1		1				
University of Colorado Short Course				1			1	1	1				
University of Edinburgh Short Course			1				1	1					
Summary of International Tertiary Institutions	63	36	25	14	18	156	Subtotal	124	52	38	4	3	221
%	40%	23%	16%	9%	12%		%	56%	24%	17%	2%	1%	
Total Tertiary Institutions	184	146	102	48	35	515		396	195	148	47	25	811
%	36%	28%	20%	9%	7%		%	49%	24%	18%	6%	3%	
Total Universities	161	110	85	45	35	436	Total	339	160	119	42	19	679
%	37%	25%	19%	10%	8%		%	50%	24%	18%	6%	3%	

Professional Organisations (22)

Engineering NZ
 IEMA
 Civil Service Institute
 Aotearoa
 GARP-Global Association of Risk Professionals
 Te Kāhui Whaihanaga NZ
 Institute of Architects
 American Society of Adaptation Professionals

NZAC NZ Association of
Counsellors
CA ANZ Chartered
Accountants A & NZ
New Zealand Law Society
New Zealand Planning
Institute
Local Government New
Zealand
Āpōpō - Infrastructure Asset
Management Professionals
Institute of Civil Engineers
Australia
Engineers Australia
NIWA
Climate Change Commission
ACENZ - Association of
Consulting and Engineering
New Zealand
Water New Zealand
NZ Infrastructure Commission
Science Learning Hub
Te Apārangi - The Royal
Society of NZ
BRANZ

Appendix A2 – Auckland University Courses and Papers

Course/Paper Name	NZQF Paper Level	Content	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
ARCHTECH 108 : Introduction to Technology and Sustainability	5	Introduction to structural concepts and construction principles, including building elements, systems and foundation options. Properties of commonly used construction materials, with a focus on timber frame constructions, their regulatory context, applications and detailing, and appropriate ways of applying the principles to design studio projects. Climate and vernacular architecture. Principles of climate-sensitive design. Sustainability and resilience in the built environment.	3	2
BIOSCI 109 : Ecology and Evolution: The Continuum of Life	5	Explores the ecological mechanisms that determine the distribution and abundance of organisms, and the evolutionary mechanisms which drive change over time. Also explores the role of society and mātauranga Māori in recognising and seeking solutions for human-induced environmental change. Course components emphasise critical thinking and scientific communication skills.	3	1,2,3,4,5
<i>BIOSCI 220 : Quantitative Biology</i>	6	An introduction to mathematical, statistical and computational literacy as required for contemporary biologists. Topics include fundamentals of experimental design, data exploration and visualisation, model-based inference to process biological data into biological information, comparing statistical models, prediction using mathematical models of biological processes, critical thinking about models and effective communication of findings. Data analysis and generation is taught using the R programming language.	2	1,2
BIOSCI 394 : Terrestrial Ecology and Conservation	7	Explores theoretical ecology from populations to ecosystems. Applies ecological theory to conservation management through a cross-disciplinary lens in the context of social and cultural values. Students will test theoretical hypotheses in the field, conduct an ecological site assessment for conservation management and learn to use population viability analysis to assess risks to threatened populations.	1	1,2
CHEMMAT 304 : The Future of Energy	7	Discussion of topical and significant developments in the field of energy transformation, usage and storage in the context of climate change, both globally and in New Zealand. Topics include: energy efficiency, energy storage and applications, sustainability, non-renewable and renewable power generation.	1	NA
CIVIL 304 : Climate Adaptation Design	7	Fundamental understanding of the impact of climate change on the built environment and strategies and design for adaptation. Topics include assessing climate change impacts; vulnerability studies and climate change adaptation strategies; adaptation design and asset management for major infrastructure and infrastructure networks; awareness and consideration of holistic adaptation strategies including indigenous knowledge perspectives and nature-based solutions.	5	1,2,3,4,5
COMMS 102 : Communication and Social Change	5	Examines how public communication shapes and is shaped by broader changes in society. Explores the evolution of language, media narratives and public understanding over time in relation to social issues such as: the representation of marginalised groups in society; environmental challenges; the changing nature of Aotearoa New Zealand society; and global societal trends.	1	3,4
EARTHSCI 120 : Planet Earth	5	Examination of geologic processes that have shaped Earth and life through time, and their impact on modern society. Includes appreciation of past and current trends in exploration and energy use, with a focus on New Zealand and greenhouse emissions in the world context.	1	1
EARTHSCI 261 : Climate and Society	6	Exploration of themes in climatology, meteorology, hydro-climatology and oceanography with a focus on the nature and role of key processes. These will be examined in relation to key issues for society such as extreme weather events, drought, floods, air pollution and climate change.	3	1,2
<i>EARTHSCI 262 : Geomorphology</i>	6	Introduces fundamental concepts in geomorphology for geologists and physical geographers. Key aspects of geomorphology, sedimentology, and earth surface processes are introduced by studying the temporal and spatial development of coastal and river landforms. Applied techniques for earth and environmental sciences, including field, remote sensing, GIS mapping, and modelling.	2	1,2,5

EARTHSCI 303 : Sedimentary Systems	7	An advanced course that critically examines ancient and contemporary sedimentary systems. State of the art techniques and technologies (sedimentology, geomorphology, modelling) are used to examine the physical and biological processes in freshwater and marine environments. The application of sedimentary systems in the context of Earth's resources and the current energy transition are highlighted.	1	NA
EARTHSCI 307 : Earth's Changing Climate	7	An exploration of long-term climatic and environmental variability from deep time to the present - all placed in the context of our warming world. Emphasis is on the nature and drivers of climate change, and the tools used for analysis of past climate impacts on Earth landscapes, the hydrosphere and the biosphere.	2	1
ENVCHG 300 : Environmental Change	7	An exploration of the nature and causes of change in the physical environment, including: natural processes driving environmental change and variability; humans as agents of change; and biophysical and societal sensitivity to change. Past, present and future interactions between society and environmental change with examples drawn from climatology and ecology. Principles of scientific writing and communication will also be addressed.	2	1,2,5
ENVPHYS 200 : Earth Observations and Models	7	An experiential study of climate and environmental physics. The analysis and modelling of laboratory, field and remote sensing observations to explain the state and behaviour of the atmosphere, oceans and the solid earth. Topics include radiation, cloud and aerosol processes, energy balance, circulations and seismic waves. It develops transferable skills in acquiring measurements, data analytical methods and laboratory techniques.	2	1,5
ENVPHYS 300 : Atmosphere, Ocean and Earth Physics	7	The physics basis for dynamical behaviours of the atmosphere, ocean and solid earth. Topics include the planetary general circulation, development of storms and convection, emergence of climate states, gravity, magnetism and seismology. An emphasis is placed on the fundamental conservation laws and processes that control geophysical systems.	1	1
ENVSCI 101/101G: Environment, Science and Management	5	Explores the science behind key environmental issues to recognise the role environmental science plays in understanding the interaction between humans and the environment. The complexity of environmental problems and the difficult task of integrating science, knowledge and values are discussed.	1	1,3,4
ENVSCI 203 : Modelling Environmental Systems	6	An introduction to the philosophy and use of models in the study of a range of environmental systems, including coastal, ecological, fluvial, atmospheric and social. Students will develop skills in designing, communicating and critically assessing models of the environment.	2	1
ENVSCI 301 : Environmental Science in Practice	7	Advances in environmental science, technology, and policy are explored using case studies of global environmental issues and proposed solutions. Students apply environmental science to assess how science is used to inform environmental intervention and policy, and understand environmental responses.	2	1,2,3,5
ENVSCI 303 : Environmental Science, Risk and Society	7	An examination of the contemporary topics that shape the ways in which environmental science may be communicated and understood. Topics of discussion include issues of scientific uncertainty, risk communication, public trust and the role of media.	3	1,3,4
FINEARTS 246 : Systems, Ecologies and Environments: Art in the Anthropocene	6	Students will undertake a studio art project that responds to the challenges of the Anthropocene and climate change. The course explores related art and ideas from Aotearoa and overseas.	1	1
GEOG 101 : Earth Surface Processes and Landforms	5	Understanding of the functioning of natural systems at the Earth's surface and human interactions with these systems. Examines the operation and interaction between Atmospheric, Hydrological, Ecological and Geomorphic systems. Environmental processes are an integrating theme. Topics include: climate and hydrological systems, ecological processes; surface sediment cycle; and processes governing development and dynamics of major landform types.	1	1
GEOG 205 : Environment and Society	6	A critical exploration of the interconnectedness of environment and society. The course highlights the importance of understanding how different views and attitudes influence people's interactions with the environment. Key themes include governance, management and development, which are addressed through issues such as conservation, climate change adaptation, disasters and resource use. Classes draw on a variety of case studies from New Zealand and overseas.	2	3,4
GEOG 320 : Resources and Environmental Management	7	Examines the development and conservation of the environment in its use as a resource base, with particular reference to the way in which institutional structures in society determine provision and allocation. Attention is balanced between international experience and the policy framework in New Zealand. The course provides an understanding of key concepts, practices and methods.	1	3,4

GEOG 325 : The Human Dimension of Disasters	7	An overview of the human dimension of disasters which covers crucial concepts and theories, vulnerability and the causes of disasters, disaster risk reduction and management, post-disaster recovery and transversal issues such as culture and gender. The discussions encompass not only theoretical but also policy and practical materials and draw on examples and case studies from throughout the world with a particular focus on the most vulnerable and marginalised areas and communities.	4	3,4
GEOG 335 : Applied Physical Geography	7	Examines the challenges of 'doing science' in the real world. With particular emphasis on climate, fluvial and coastal processes, the types of data, knowledge and information needed for decision making in environmental contexts are examined. Examines the ways human activities effect, and are affected by, the environmental settings of humans. Seeks improved understanding, and prediction, of the world around humans framed as both a resource and hazard	3	1,2
GEOG 351 : Coastal and Marine Studies	7	Focuses on the development of coastal landforms across a range of temporal and spatial scales. Introduces natural processes such as waves, tides and circulation, as well as geological-scale coastal evolution driven by changes in sea level and sediment supply. The course has an applied focus with specific emphasis on coastal management problems that affect society. Issues considered include coastal erosion during storms, the impacts of shoreline engineering, climate change and accelerating sea level rise.	5	1,2
GEOG 352 : Landscape, Environment and Heritage	7	An examination of environmental change from a historical geography perspective. Approaches to investigating and understanding the transformation of environments are explored, and processes driving creation of different types of landscapes including heritage places are considered. The course enables students to place the modern environment within a historical context.	1	1,2
GEOPHYS 311 : Atmosphere, Ocean, and Climate Physics	7	Examines the physical and dynamic processes shaping the atmosphere and oceans, covering the thermodynamics of the climate system and the dynamics of global atmospheric and oceanic circulations. Explores the fundamental physical processes that control Earth's climate and investigates the dilemmas they present in our current understanding of climate.	1	1
GISCI 241 : Principles of Remote Sensing	6	An introduction to remote sensing tools and techniques and their application within the earth, environmental and urban environments. The course focuses on the processing, analysis and interpretation of data collected by government and commercial satellites, Unmanned Aerial Vehicles (UAV) and aerial photography. The course introduces image interpretation, multispectral images, supervised and unsupervised image classification and change detection. Techniques for analysing remote sensing data are introduced through a series and lab-based activities and are applied during an independent project.	2	1,5
GISCI 341 : Remote Sensing of Surface Processes	7	Key concepts of geographic information science as applied to earth and environmental sciences. Monitoring, analysis, visualisation and modelling of landscape change for terrestrial and coastal environments, using imagery from satellites, airplanes (LiDAR) and UAVs. Principles and practice of field techniques, including RTK-GPS, LiDAR and UAV piloting will be reviewed with application to catchment management, conservation, natural hazards and civil infrastructure.	3	1,5
GLOBAL 101/101G : Global Issues, Sustainable Futures	5	The basis for sustainability – social issues such as population and consumption, environmental issues such as climate change, limited resources and environmental degradation. Discusses the roles that various disciplines (law, business, engineering and urban planning) will play in developing solutions, including consideration of human rights and good governance, new concepts in economics and business management which will lead to sustainable businesses, developments in science and technology which will change how we manage resources and new visions for cities and communities which will support sustainable ways of life.	1	3,4
MARINE 100/100G : The Oceans Around Us	5	A multidisciplinary approach to understanding the importance of our oceans in terms of natural processes and human uses and values. It includes an understanding of the physical and biological processes in the ocean and how they are addressed through ocean management in New Zealand and internationally, allowing informed debate about the future of the ocean realm.	1	1
MARINE 302 : Dynamics of Marine Systems	7	Fundamental processes in the marine environment with an emphasis on interdisciplinary linkages in the functioning of marine ecosystems. Topics include: the role of fluid dynamics in the lives of marine animals and in shaping the physical marine environment, and interdisciplinary studies of marine ecosystems.	1	1
MEDSCI 101G : Environmental Threats to Human Health	5	Our environment sustains our lives but at times threatens our health. These threats may occur naturally, or arise from damage we have inflicted on the environment. This course considers health impacts of climate change, pollution, lifestyle choices, poverty and affluence, workplace hazards, emerging infectious diseases, and dangers affecting cancer risk.	1	1,2
PACIFIC 206 : Pacific Youth: Contemporary Realities in the Pacific Region	6	Addresses critical contemporary issues for youth in the Pacific region with a particular emphasis on Aotearoa. Throughout this course, issues around health and wellbeing, identities (ethnic, spiritual, gender), education, climate change, artistic expressions, resilience, youth engagement and risk taking behaviours will be examined, and the impacts these have upon Pacific young peoples, their families and their communities will be explored.	1	1

PACIFIC 306 : Pacific Youth: Contemporary Realities in the Pacific Region	7	Addresses critical contemporary issues for youth in the Pacific region with a particular emphasis on Aotearoa. Throughout this course, issues around health and wellbeing, identities (ethnic, spiritual, gender), education, climate change, artistic expressions, resilience, youth engagement and risk taking behaviours will be examined, and the impacts these have upon Pacific young peoples, their families and their communities will be explored.	1	1
PHIL 250 : Philosophy and the Environment	6	Philosophical questions relating to the environment and our use of it, such as the following: Do we have obligations to future generations, especially concerning preservation of the environment? What are our moral and epistemic responsibilities regarding climate change and other environmental issues? Does nature have intrinsic value? Is it better to live in a natural world or a virtual world.	1	3,4
PHIL 351 : Philosophy and the Environment	7	Philosophical questions relating to the environment and our use of it, such as the following: Do we have obligations to future generations, especially concerning preservation of the environment? What are our moral and epistemic responsibilities regarding climate change and other environmental issues?	1	3,4
POLITICS 313 : Governing Planet Earth	7	Environmental problems play an increasingly important role in contemporary politics. This course examines the role of ideologies and institutions in shaping environmental governance challenges from climate change and land-use conflicts to air and water pollution. Drawing from examples in New Zealand and around the globe, topics include limits to growth, sustainable development, ecological modernisation, ecolocalism and environmental justice.	1	1
SUSTAIN 200 : The Sustainable Community	6	What is the sustainable community? We unpack the nature of complex social and ecological systems with a particular focus on large organisations and cities. Students undertake a group project to enhance their skills in collective decision making, and to develop skills in integrating information and presenting sustainability solutions. Two sustainability issues, such as climate change and fisheries, are discussed in depth.	2	1,2,3,4
THEOREL 222 : Religion, Climate Change and Justice	6	An exploration of the influence of religion on how we understand and relate to the natural world. Students will learn about some religious ideas that have contributed to the current climate crisis, as well as the role that religion and spirituality are playing in responses to this crisis.	1	1
THEOREL 322 : Religion, Climate Change and Justice	7	An exploration of the influence of religion on how we understand and relate to the natural world. Students will learn about some religious ideas that have contributed to the current climate crisis, as well as the role that religion and spirituality are playing in responses to this crisis.	1	1
URBPLAN 201 Urban Policy Analysis	6	The application of critical quantitative and qualitative research skills and methods for urban planning.	2	3,4
URBPLAN 223 Urban Planning Law	6	A critical understanding of the concepts and principles relevant to urban planning legislation, practice and decision-making, including the Resource Management Act 1991, Local Government Act 2002, Land Transport Management Act 2003, Climate Change Response Act 2019 and Urban Development Authority Act 2020.	2	3,4
URBPLAN 303 : Ecology and Resilience	7	A critical analysis of the ecological view towards the concepts of resilience; social-ecological systems models, considering wicked problems and the impacts of climate change.	2	1,2
BAdvSci(Hons)	8	As an Environmental Change student you'll have a multi-disciplinary, collaborative and holistic learning experience, studying courses from the following possible subject areas: Environmental Management and Environmental Science	1	1
Postgraduate Diploma of Science in Environmental Science	8	Postgraduate study in Environmental Science focuses on a scientific approach to environmental problem solving in natural and managed environments.	2	1,2
MEnvSci Master of Environmental Science	9	With an emphasis on transdisciplinary knowledge, you will study a range of topics within the School of Environment. Areas the programme focuses on include water-use and governance, air and water quality, ecosystem ecology, environmental modelling and analysis, climate change, and resource management.	3	1,2
Post Graduate Diploma in Science (PGDipSci) in Environmental Physics	8	You will take a mix of advanced courses in Geology, Mathematics and Physics and focus on applied/solid earth, atmospheric or marine environmental physics. Research areas include: Climate and environmental change and Environmental data analysis and modelling	2	1,2

MSc in Environmental Physics	9	You will take a mix of advanced courses in Geology, Mathematics and Physics and focus on applied/solid earth, atmospheric or marine environmental physics. Research areas include: Climate and environmental change and Environmental data analysis and modelling	2	1,2
URBPLAN 712 : Sustainable Urbanism	9	Research into critical and contemporary urban planning issues.	1	1
A+C60:C81NTHRO 759 : Special Topic	9	This Special Topic course titled 'Kaitiakitanga: Protecting Our Planet' explores the relevance of kaitiakitanga and environmental stewardship to anthropology. It will introduce students to a number of political and contested sites in Aotearoa-New Zealand, each with their own unique stories and guardians who have a duty of care for natural environments. This new course imagines an anthropology that is relevant now and for the future, with locations and people of Aotearoa not considered just as study sites to be extracted from but as active co-producers of anthropological knowledge.	3	1,2,3,4,5
BIOSCI 724 : Marine Ecology	9	The ocean covers 70% of the surface area of Earth, provides 50% of the oxygen and much of the food consumed. This course considers marine ecology at the local, hemispheric and global levels with a focus on habitat and ecosystem connectivity and the impacts of anthropogenic change.	1	1,2
BIOSCI 766 : Global Change Ecology	9	Discusses the profound impacts global change processes have on ecological systems, including climate change, land use change, biodiversity loss and changes in biogeochemical cycles. Covers the complex concepts of global change and approaches for planning and mitigation. Some previous knowledge of ecology is desirable.	3	1,2,3,4
BUSFIN 713 : Climate Finance	9	Investigates the key debates in climate finance related to climate change. Evaluates the financial impact of climate change and climate-related risks. Critically evaluates strategies and modelling techniques used by financial market participants in the assessment of the impact of climate change.	3	1,2
DEVELOP 710 : Development Policies and Institutions	9	Provides students with in-depth knowledge of policy approaches to alleviate poverty, enhance social justice and achieve sustainability. Contemporary development policies carried out by governments, donor agencies and UN organisations will be scrutinised. Examples of policies that will be covered in the course are land reform and migration policies, gender policies, climate adaptation and mitigation as well as ethical trade policies.	3	1,2,3
DISMGT 701 : Disaster Risk Management	9	A broad based understanding of the critical elements of risk and risk management in pre- and post-disaster scenarios. Key elements include risk identification with regard to the forms and types of risk inherent in areas prone to disasters. Risk management approaches are explored and applied to different aspects of disaster management.	5	1,2,3,4,5
EARTHSCI 705 : Geohazards	9	Contemporary methods used to identify and assess natural hazards, techniques used for the probabilistic forecasting, spatial representation and communication of hazards. How the relationship between hazard information, risk mitigation and emergency management is addressed.	5	1,2,3,4
EARTHSCI 720 : Environmental Geochemistry	9	Provides a broad overview of applications of geochemistry across multiple disciplines. In addition, this course will help determine the suitability of different analytical techniques to different problems while providing practical experience in collecting and evaluating geochemical data. Subject areas are wide-reaching and include, geology, environmental science, biology, archaeology, and forensic sciences.	3	NA
EARTHSCI 732 : Exploring Environmental Change	9	Sedimentary and biological records show that extreme, rapid and short-lived climatic and environmental changes occurred in the past. Case studies are used to introduce the tools used to identify and interpret abrupt environmental changes during the Last Glacial Period and Holocene that may have implications for the present and our future.	1	1,2
ENGGEN 726 : Climate Adaptation of Infrastructure	9	Impacts of climate change on infrastructure and adaptation strategies to respond to these changes. Impact assessments, vulnerability studies, and development of adaptation strategies and techniques for whole of life asset management. Decision-making, management and climate resilience of transport, potable water provision, stormwater and wastewater systems, buildings and other physical infrastructure systems.	5	1,2,3,4,5
ENVENG 708 : Environmental Engineering for Sustainable Futures	9	Addresses emerging engineering solutions to challenges facing humankind including climate change, sustainability and resilience of our society, and persistent waste and pollution in the environment. Includes applications of systems modelling through a holistic thinking lens, sustainability innovations, risk assessment and impact in various technologies and processes, climate change adaptation and mitigation.	5	1,2,3,4

ENVMGT 701 Environmental Management in Practice	9	Research and practice in Environmental Management. Students will explore alternative perspectives and methodologies applied in environmental management and develop a research proposal that includes a critical review of a contemporary practice.	2	1
ENVMGT 741 : Social Change for Sustainability	9	Explores the concept of sustainability through different theoretical frameworks and how social and environmental movements have mobilised around this concept over time. Critically interrogates what is sustainable, what is social change, and how can social change be sustainable in a global economy. Draws on case studies of current environmental issues and associated popular social movements.	1	1
ENVMGT 742 : Social Dimensions of Global Environmental Change	9	An examination of the social dimensions of global environmental change. This includes a review of the history of climate science, the interaction of science with other knowledges, and contemporary debates surrounding climate change as well as other forms of environmental change. It also examines the different ways in which people respond to environmental risks and changes, and the challenges associated with mitigation and adaptation policies.	5	1,2,3,4
ENVMGT 744 : Resource Management	9	A review of advanced principles, concepts and approaches to the sustainable management of natural resources. Case studies emphasise the need for conflict resolution, equitable allocation, and decentralised decision-making to address the social and environmental impacts of resource utilisation.	2	4
ENVMGT 746 : Collaborative Environmental Management	9	An exploration of participatory management and its potential for engaging communities, resource users and stakeholders in the pursuit of sustainable development. Students will examine strategies for incorporating local knowledge within conservation practices and for reconciling natural resource management with human welfare, social justice and indigenous rights.	4	3,4
ENVPHYS 700 Frontiers in Climate Science	9	Students will employ core methodologies (experimental, observational, numerical) to investigate some aspect of climate and environmental systems such as key atmospheric, ocean or solid earth geophysical phenomenon. They will relate their findings to contemporary research in the field, considering wider societal aspects and issues. Students will develop their skills in communication, critical thinking, teaching and creative problem solving	2	1,2
ENVSCI 705 : Handling Environmental Data	9	Contemporary approaches to understanding and analysing environmental data with an emphasis on developing skills to support the 'transformation, visualisation, modelling' cycle. The importance of adopting reproducible research practices (eg, data and code archiving) will be emphasised. The course focuses on an applied laboratory component and will be taught in open-source software.	2	1,2,5
ENVSCI 711 : Environmental Impact Assessment	9	A focus on the interdisciplinary, scientific assessment of environmental impacts with specific reference to applying this discipline in New Zealand. Methodologies used in the assessment, monitoring and regulation of environmental impacts will be discussed and critically evaluated. The contribution of Environmental Impact Assessment to policy and regulatory decisions in environmental management, including consenting procedures and plan-making processes and the roles and duties of public and professional participants, will be covered. A key component of the assessment is the preparation of an individual Environmental Impact Assessment report.	3	1,2,3
ENVSCI 716 : Applied Freshwater Ecology	9	Applied freshwater management and restoration issues considered in light of general ecological processes in freshwater systems. Contemporary issues in New Zealand and overseas such as eutrophication, invasive species and climate change are considered. Students will be introduced to methods of measuring ecological health of streams and lakes. Field and laboratory experience in data collection and analysis relevant to environmental management.	2	1,2
GEOG 745 : Applied Fluvial Geomorphology	9	Catchment-scale perspectives are used to analyse spatial and temporal variability in river forms and processes. River responses to disturbance are placed in a longer-term evolutionary context. Prospective river futures are appraised using field analyses and numerical modelling applications. These principles and techniques are used to discuss management options.	2	1,2,3
GEOG 746 : Applied Coastal Geomorphology	9	An advanced course on the process-form relationships that shape coastlines over a range of spatial and temporal scales. Coastal processes are examined with field experiments in which principles of experiment design and field deployment are demonstrated. Long-term evolutionary perspectives are examined using a range of field techniques. These short- and long-term approaches are then merged to address examples of applied coastal management problems.	2	1,2,5
GEOG 748 : Current Issues in Coastal Management	9	Critical consideration of contemporary issues in coastal management. Topics may include: competition for coastal space and resources; vulnerability of coastal communities to climatic variability; scientific uncertainty in the decision making process; understanding the legacies of past planning decisions. Case studies are used to explore complexities of the physical and social dimensions of coastal management approaches within the context of current regulatory frameworks.	5	1,2,3

GEOG 749 : Climate and Society	9	An examination of climate themes relevant to society. Themes will vary but may include hydrology and water resources, agriculture, human health, ocean-atmosphere interaction and energy in the climate system. The sensitivity of selected biophysical and human activity systems to climate will be explored and the actual and potential impacts of climatic variability and change (past and future) investigated.	1	1,2
INDIGEN 711 : Indigenous Environmental Politics	9	Examines contemporary issues related to Indigenous peoples and the environment. There will be a particular focus on the interface between Indigenous peoples, governments and corporate bodies. Topics may include Indigenous responses to environmental degradation; Indigenous peoples and extractive industries; sustainable development; Indigenous environmental protest movements; land and treaty rights; traditional knowledge and resource protection; and Indigenous peoples and climate change.	2	1,2,3
LAWENVIR 404 : Climate Change Law	9	An introduction to and critical examination of multi-sourced climate change law from a New Zealand perspective. Against the relevant international law backdrop, the course critically surveys and assesses domestic New Zealand climate change law including the 'zero-carbon' legislative framework, emissions trading, common law, climate change under planning and environmental law, and the emerging legal regime on managed retreat.	2	1,2,3
LAWENVIR 723 : Climate Change Law	9	Explores the interconnected science, policy and legal issues involved in addressing climate change. Involves individual research resulting in a substantial individual research essay.	2	1
LAWENVIR 737 : Special Topic: Global Environmental Law	8	The course examines environmental law and governance from the international, regional, and national levels. The global coverage includes international environmental law and draws on experiences from the EU, USA, Canada, South America, Australia, and New Zealand highlighting environmental policy innovations from around the world. The topics include state sovereignty, the UN system, principles and sources of international environmental law, specific areas (climate, oceans, biodiversity) and emerging concepts such as rights of nature, ecological integrity, earth system law and earth trusteeship.	1	1
LAWPUBL 748 : Special Topic: South Pacific Legal Studies: Critical Issues	9	The course will comprise a selection of topics designed to consolidate and advance a critical understanding of contemporary legal issues faced by island nations of the South Pacific. The topics covered will vary to reflect urgent and emerging issues in South Pacific law but are likely to include customary law and legal pluralism, constitutional law, democracy and governance, human rights issues, and climate change in the region.	1	1,2

Appendix A3 – Waikato University Courses and Papers

Course/Paper Name	Paper Level	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
Bachelor of Climate Change	7	This degree is a unique and flexible qualification, which will arm you with the knowledge and expertise to help solve this complex, global issue. We urgently need people from all walks of life who can contribute their expertise to develop effective climate change solutions that span its scientific, social, cultural, economic and political dimensions. This is a degree with a difference that will ensure you take up your place in the workforce as a climate-informed citizen.	3	1,2,3,4,5
ARTSC106 Critical Social Science Research: The Crisis of Climate Change	5	This paper is an introduction to critical social science research in Aotearoa New Zealand. It adopts an interdisciplinary approach spanning Indigenous and Feminist studies, political science and sociology, and is organised around the case study of climate change.	2	1
BIOEB 102 Introduction to Ecology and Biodiversity - Mātai Haurōpi a Kanorau Koiora	5	An introduction to the principles of ecology and biodiversity. Topics include population, community and ecosystem ecology, conservation biology, and the structure, functioning and environmental responses of animals and plants. Examples will include New Zealand ecosystems and biota.	1	1,2
CLIMT101 Introduction to Climate Change Science - Pūtaiao Huringa Āhuarangi	5	An overview of the scientific basis of climate change with emphasis on understanding climate change mitigation and adaptation. He tirohanga whānui nō tēnei pepa i te tūāpapa o te pūtaiao o te huringa āhuarangi. He nui te aro ki te whakamauru me te takatū o te huringa āhuarangi.	4	1,2
CLIMT103 Arts Activism in a Changing Environment	5	This paper introduces the role of arts in environmental, climate change and social activism through critical discussion of performances, events and art objects, and the complexities of communication and media representation.	1	1
CLIMT104 Introduction to Māori, Pacific and Indigenous Studies: The Climate Change Crisis	5	This course examines Māori, Pacific and Indigenous peoples' philosophies and relationships with land, language, culture and resources, with a particular focus on understanding the climate change crisis.	3	1,2
CLIMT201 Climate Change Modelling, Impacts and Adaptation	6	The strengths and weaknesses of different types of climate models and scenarios are explored, with an emphasis on understanding the projected climate change risk profile of Aotearoa. An understanding is gained of how different climate hazards respond to a warming world, as well as non-hazard factors which determine the severity of subsequent impacts.	4	1,2
CLIMT202 Māori, Pacific and Indigenous Responses to Climate Change	6	An analysis of how Māori, Pacific and Indigenous communities respond, adapt and mitigate the challenges presented by climate change drawing on indigenous theoretical approaches and relationships with land, oceans, culture, resources, development and political frameworks within settler-colonial states and Pacific nations and others.	4	1,2,3
CLIMT301 Climate Change Solutions: Multidisciplinary Group Projects	7	Working in groups, students from different majors within the Bachelor of Climate Change will work together with an external organisation to develop an innovative solution to an authentic climate change problem.	2	3,4

EARTH101 Introduction to Earth System Sciences - Pūtaiao Pūnaha Whenua	5	A lecture and laboratory paper that explores the interacting processes that affect the surface of the Earth, producing landforms and resources, with a focus on physical processes. Topics covered include coastal processes and hazards; climate change; weathering; erosion and mass movement; soil formation; the hydrological cycle; rivers and groundwater; and glaciers.	1	1
EARTH231 Water Resources, Weather and Climate	6	Introduction to atmospheric and hydrological processes affecting weather and climate in Aotearoa, including the distribution of water in space and time. Topics include mid-latitude weather and atmospheric precipitation processes and how they interact with the land to affect hydrological regimes across Aotearoa, including the potential impacts of anticipated future changes in climate.	1	1,2
ECONS307 Economics of Land, Water and Environment	7	This paper provides students with a detailed understanding of the role of economic analysis in solving real world environmental problems including pollution, sustainable development, resource scarcity, and climate change.	1	1
ENGLI200 Global Fictions	6	This paper examines literary responses to the contemporary world. We will study international writing that grapples with issues associated with gender, race, technology, terrorism, and climate change.	1	1
ENVPL101 Future Cities	5	Urban areas are under increased pressure from population growth, development, natural hazards and climate change. These pressures are set to continue into the future and pose considerable challenges for both planning new urban areas and retrofitting existing ones. This paper focuses on the planning challenges for urban areas in Aotearoa-New Zealand.	1	3,4
ENVPL303 Environmental Assessment and Policy	7	This is a project-based paper that provides an understanding of how environmental assessments are prepared, and used to assist decision-making and inform policy implementation for complex environmental problems such as climate change impacts, freshwater quality, and environmental pollution.	2	1,2
ENVSC101 Environmental Science - Pūtaiao Taiao	5	A scientific study of the interaction between humans and the environment including climate change, utilisation and exploitation of natural resources and the effects of human activities on biological, chemical and physical processes that form resources and control ecosystems.	1	1,2,3
ENVSC201 Environmental Monitoring	6	An introduction to reasons for, and design and implementation of, environmental monitoring in New Zealand. Skills in data collection, management, presentation, and interpretation are developed for a range of environments using both field data collection and published data-sets.	2	5
ENVSC202 Environmental Chemistry and Geochemistry	6	This paper is a broad introduction into environmental chemistry and geochemistry including the formation of the elements, chemical evolution of Earth, modern Earth surface processes, fossil fuels and biomarkers, global biogeochemical cycling, atmospheric chemistry and global climate change.	1	1
LEGAL407 Climate Change Law	7	This paper addresses the law concerning climate change, including international law, emissions trading and other carbon pricing systems, sectoral regulation to mitigate emissions, sequestration, and adaptation.	3	1
LEGAL434 Environmental Law	7	This paper examines the foundations and principles of environmental and resource management law, their expression in key areas (biodiversity, climate change, freshwater, and oceans), and the planning, adjudication and compliance techniques used to implement the law.	1	1
LEGAL466 International Environmental Law	7	This paper provides a synthesis of theory and specific case studies, to enable students to understand the most formidable international environmental problems in international law, and the context from which these problems originate. Working with thematic areas of international environmental law, ranging from climate change to biological diversity, specific case studies will also include international environmental law and sustainable development, economic growth, free trade, debt, aid and sovereignty.	1	1
POLCY318 Global Environmental Politics and Policy	7	This paper explores contemporary debates on environmental politics, sustainability, justice, and environmental governance. It examines the political processes underpinning the search for cooperative solutions to environmental dilemmas, including climate change.	1	1
POLSC204 Communicating Climate Change	6	Through a mix of theory and practical applications, students learn how to communicate climate change impacts and solutions in engaging ways.	1	1,3
SOCIO206 Environmental Sociology: From Denial to Actions	6	The environment and climate are as much about human activity, economic and political choices as scientific information. Thinking sociologically, not just as individuals is the key to change.	1	3

PGDip (EnvSci) Post graduate Diploma in Environmental Science	8	Protecting and sustainably managing our environment is one of our greatest global challenges and our graduates are well placed to tackle this challenge head on.	3	1
MEnvSoc	9	The Master of Environment and Society welcomes graduates from diverse fields like environmental sciences, social sciences, management, law, or economics. It offers opportunities to connect with local communities, educational groups, and governments.	3	3
BIOEB 504 Freshwater Ecology	9	This paper explores how advances in ecological theory and scientific methods can deliver new insights into the structure and functioning of freshwater ecosystems. The paper also considers how this knowledge can improve our understanding of environmental problems and help guide freshwater management.	1	1
ENVPL500 Advanced Environmental Assessment and Planning	9	This is a project-based paper that provides an understanding of how environmental assessments are prepared, and used to assist decision-making and inform policy implementation for complex environmental problems such as climate change impacts, freshwater quality, and environmental pollution.	2	1,2
ENVSC501 Assessment of Environmental Change	9	This paper illustrates how environmental science is applied to understand impacts of human activities and their mitigation supporting decisions made in policy, planning, law, and business, in New Zealand and internationally.	3	3
ENVSC502 Conservation and Restoration: Theory and Practice	9	This paper examines the application of scientific principles and theories in conservation biology and restoration ecology, with particular reference to New Zealand examples showcasing management of species and ecosystems impacted by human activities.	1	1,2
ENVSC503 Greenhouse Gas Fluxes from Land	9	Processes and factors controlling exchanges of water, carbon and greenhouse gases in natural or managed ecosystems, methodologies to quantify them, and approaches to mitigate undesirable anthropogenic consequences.	4	1,2
SCIEN512 Data Analysis and Experimental Design	9	This paper covers aspects of research design for experiments, and methods for analysis of scientific data using modern statistical techniques.	2	1
GEOGY520 Human Dimensions of Environmental Change	9	This paper examines the increasing risks imposed on human communities by global environmental change. The paper establishes a platform for the critical analysis of human-environment relations by introducing students to important theoretical developments including the role of culture-nature dualisms, theories on population-environment relationships, political ecology, new approaches to the study of disasters and the increasingly important concepts of vulnerability and resilience	3	1,2,3

Appendix A4 – Massey University Courses and Papers

Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
BA (Environmental Studies)	7	You can choose to explore almost anything to do with the environment, from a scientific, social, cultural or economic point of view.	3	NA
BRP Bachelor of Resource and Environmental Planning	7	You can contribute to designing liveable cities and regions and ensuring sustainable use of resources	3	NA
BSc (Earth Science)	7	This degree will take you on a journey of understanding the processes that moulded our planet. From observing our landscapes from space to finding solutions to our natural hazards and exploring our geology	1	1,3
BSc (Environmental Science)	7	This degree aims to develop a sustainable path for the future. We are looking to solve real-world issues such as managing natural resources and environmental impacts.	1	1,3
132111 Oranga Taiao, Oranga Tangata: Planning and the Environment	5	A critical, Māori-centred introduction to environmental planning that emphasises protecting the environment for future generations.	3	1,3
132217 Planning Hazard- Resilient Communities	6	An introduction to the role of planning in building sustainable and disaster resilient communities through the use of various processes and tools to assess hazard vulnerability, reduce hazard risks, improve disaster readiness, develop effective response capabilities and facilitate recovery.	2	2,3
132112 Planning for Sustainable Development	5	The multi-dimensional and multi-disciplinary nature of planning is explored with reference to the challenge of sustainable development and the application of planning principles to real-world issues.	1	1
179120 Environmental Sustainability in Social and Community Work	5	An introduction to issues of sustainability, climate change and the environment in social and community work.	1	1
119203 Agriculture and the Environment	6	Throughout the history of agriculture, it has both provided food security and created environmental challenges. This course will examine both contemporary environmental challenges including agricultural greenhouse gases and climate change, water resources and pollution, soil salinization and erosion, and the impact of natural environmental processes on agriculture.	1	1,2
120217 Plant, Cell and Environment	6	This course examines developmental and physiological responses that enable plants to cope with a changing environment and that occur daily, seasonally and over longer timescales; e.g. global climate change. Major topics include plant responses to light, carbon dioxide levels, mineral nutrition and abiotic and biotic stresses such as drought and pests. Emphasis is on mechanisms by which changes in the environment are perceived, signalling processes that are induced, and cellular and developmental changes that help the plant cope with the changed environment.	1	2
121210 Environmental Issues	6	A consideration of major environmental issues that affect, or may affect natural and built ecosystems into the future. Topics include climate change mitigation and adaptation, the 'Ozone Hole', land degradation and soil contamination, increasing water scarcity and pollution, loss of biodiversity and fisheries, sustainability of production and consumption systems, and the sustainability and liveability of major urban centres.	4	1,2,3

131121 Rich World, Poor World	5	This course introduces students to the field of Development Studies and to some of the Big Issues facing people living in the Global South or 'developing' countries. We talk about the Big Ideas that influence the approaches taken to try and solve these issues and we illustrate these with case-studies from many parts of the world. Key Big Issues include climate change, Food Security and Hunger and Migration/Refugees.	1	1
145120 Geographies of Aotearoa/New Zealand	5	An introduction to the changing social and environmental geographies of Aotearoa New Zealand. Highlighting the spatial outcomes of local, national and global processes, the course will cover themes such as the spatial distribution of climate change effects, the diverse social and physical landscapes of Aotearoa, and local and regional economies. A decolonial lens – meaning one that honours Te Tiriti relationships and obligations, and explicitly contests the ongoing impacts and legacies of Aotearoa's colonial history in terms of society, landscapes and knowledge construction – will help illuminate the contemporary challenges facing the diverse peoples and landscapes of Aotearoa.	1	1,2
145213 Resource Conservation and Sustainability	6	Various distinctly geographical approaches to resource conservation are discussed. Topics include: environmental change, human impact, renewable and non-renewable resource conservation, and the role of the state.	1	1
178360 Sustainability, Environmental and Climate Change Economics	7	A survey of environmental and climate change issues and the application of economic analysis to these issues and policies to achieve sustainable outcomes.	2	1,3
196329 Marine Ecology	6	Students will develop an in-depth understanding of the life histories of marine organisms and the mechanisms that determine the distribution and abundance of biodiversity in our oceans. Topics include: marine organism life histories, connectivity and dispersal, community ecology, trophic ecology, and anthropogenic impacts including climate change.	1	1,2
199313 Environmental Physiology	7	The physiological mechanisms that enable invertebrate and vertebrate animals to live in changing environments.	1	1,2
228311 Engineering Practice 5: Engineering Design with Constraints	7	Technology must be effectively interfaced with society and the environment to succeed. Overarching social and environmental constraints are applied, including impact assessment and efficiency analysis tools. Project based learning is undertaken on the sustainable design of a consumer product underpinned by appropriate technical knowledge.	1	2,3
233105 Our Dynamic Earth	5	An introductory course exploring the dynamics of Earth and how it changes through time, from the core to the atmosphere, plate tectonics to volcanoes, glaciers to rivers, mountains to oceans, and mass extinctions to the evolution of life. Through exploration of these processes and their interrelationships with environments and society, including natural hazards, climate change, and earth resources, students will develop their practical, problem solving, and communication skills.	1	1
233212 Earth Surface Processes	6	This course explores surface processes across Earth's dynamic landscapes. Focusing on mountain, hillslope, river and coastal environments, the course investigates how and why these landscapes change over time. The course introduces methods for analysing and predicting landform change, and provides a foundation for managing geomorphic issues impacting society and the environment.	1	1
233311 Earth Environments Through Time	6	Principles and techniques for investigating and reconstructing past environments in a range of geological time frames and settings, with emphasis on the value of such reconstructions to understand our current environment and predict what may happen in the future.	1	1,2
233312 Natural Hazards	7	An exploration and analysis of the nature, causes, impacts, and management of natural hazards, covering earthquakes, volcanic eruptions, landslides, weather, floods and coastal hazards. How climate change and human activity influence the hazards facing society.	3	1,2
233313 Earth Systems	7	Quantification, forecasting, visualisation and communication of geoscience system dynamics to solve a range of environmental problems. Problems explored range from environmental pollution and instability of geoengineering structures to problems posed by gravity currents, landslides, tsunamis, floods and coastline changes. Students will learn to solve these geoscience problems quantitatively using modern computational, experimental, and analytical techniques.	2	1
146205 Environmental Anthropology	6	An exploration of contemporary approaches in environmental anthropology.	1	1

Grad Dip in Arts (Environmental Studies)	8	With a Graduate Diploma in Arts (Environmental Studies), you can explore environmental studies from a scientific, social, cultural or economic point of view.	3	NA
PGDipEnvMgmt-Post Grad Dip in Environmental Management	8	Massey's environmental management programme reflects the growing need to protect the environment and to use the resources of land, water, soil, plants, and animals in a balanced and sustainable way.	1	1,2
PGCertEmergMgt-Post Grad Cert in Emergency Management	8	Massey's Postgraduate Certificate in Emergency Management will give you a range of knowledge about theory and research in emergency management. It covers emergency management issues, practices and policies.	2	1,2,3
Climate Action – Master of Sustainable Development Goals	9	The specialisation will equip you to critically understand and apply tools and approaches associated with climate finance, reporting, mitigation, and adaptation.	5	1,3
Master of Resource and Environmental Planning	9	A study of natural hazards and the role of planning in building sustainable and disaster resilient communities. Develop and apply planning processes and tools to assess hazard vulnerability, reduce hazard risks, improve disaster readiness, develop effective response capabilities, and facilitate recovery.	2	1,2,3
Master of Environmental Management - MEnvMgmt	9	This degree reflects the growing need to protect the environment and use resources of land, water, soil, plants, and animals in a balanced and sustainable way.	2	1,2
Master of Sustainable Development Goals	9	This qualification will give you an advanced grounding in the theory, practice, and application of the UN Sustainable Development Goals related to environmental sustainability.	3	1
Master of Emergency Management- MEmergMgt	9	Emergency management focuses on organising communities to respond to disasters. It also examines how to survive them, rebuild social structures and infrastructure, and sustain and preserve life.	2	1,2,3,4
130706 Emergency Management in Practice	9	This course studies the practical application of current emergency management theory. The emphasis is on examining a specific topic area, analysing current trends and discussing practices that will enhance reduction, readiness, response and recovery efforts in managing disasters and emergencies.	2	3
131720 Climate Change and Sustainability	9	The purpose of this course is to provide students with an advanced understanding of the climate change crisis based on the idea of critical hope, drawing from indigenous, natural, and social science theories, knowledges and frameworks. Students will critically engage and reflect on the ways in which the Sustainable Development Goals represent and attempt to mitigate Climate Change. In particular, this course explores the effects of climate change on Māori and Pacific peoples, and using real-world examples examines how indigenous knowledges, approaches and practices are shaping responses in these communities.	3	1,2,3
131721 Global and Local Responses to Climate Change	9	The purpose of this course is to engage students in critical explorations of climate change mitigation, adaptation and resilience. In particular, we will examine the complex relationship between global worldviews, state-led or professional practices and, on the other hand, local or Indigenous worldviews and community-based or alternative livelihood practices responding to climate change. Drawing from a critical hope perspective, students will determine effective policy and practice responses to climate change in specific contexts. The course also investigates global and local climate change funding mechanisms, with specific focus on Aotearoa and the Pacific.	4	1, 2,3,4
132751 Natural Hazards and Resilient Communities	9	A study of natural hazards and the role of planning in building sustainable and disaster resilient communities. Develop and apply planning processes and tools to assess hazard vulnerability, reduce hazard risks, improve disaster readiness, develop effective response capabilities, and facilitate recovery.	4	1,2,3
152704 Business and Sustainability	9	An analysis of the relationships between the business community, the natural environment, and social and environmental sustainability. The course examines global debates on social and environmental issues, introduces theories of sustainability, and considers the implications of sustainability for business policy and management.	2	1

178719 Climate Change Economics and Policy	9	An analysis of the economics of climate change and evaluation of the mitigation options used by policy makers globally.	3	1
178742 Environmental Economic Issues	9	Economic analysis of policy management issues in the use of natural resources, climate change, and the environment.	3	1
188707 Environmental Management Principles and Practice	9	This course uses a multidisciplinary approach to examine contemporary environmental issues. Key environmental management principles and practices are introduced and explored through a series of applied case studies.	3	1
189730 Sustainable Land and Water Management	9	Advanced theoretical and practical experience in the application of soil, water and GHG emission sciences to the sustainable management of New Zealand's land, water and air resources. Sources and pathways for nutrient, contaminant and GHG transfer from soil to water and atmosphere will be analysed, and considered in the context of land use and potential in-field and edge-of-field attenuation technologies and practices.	2	NA
218715 Sustainability and Climate Change for Construction Industry	9	Climate change presents specific challenges to the domestic and international construction industry, requiring innovations during the entire lifecycle of projects. This course introduces students to aspects of climate change, principles of sustainability, and the UN Sustainable Development Goals relevant to the built environment. It focuses on the specific implications of climate change for the construction industry and ways in which the industry can take leadership in promoting sustainability.	4	1,3
218769 Energy-Efficient Building Design	9	This course examines approaches to reducing energy consumption in residential and commercial buildings resulting from the design and use of the building and its energy services. The course covers the principles of energy-efficient building design as well as use and interpretation of energy and sustainability audits. Identification of options for reducing energy use through renovation and retrofitting as well as occupant behaviour are also covered.	2	NA
233715 Environmental and Geological Hazards	9	One of the biggest issues facing the developed and developing world is exposure to environmental and natural hazards. Practical solutions to recognising, managing and mitigating environmental/natural hazard, risk and disasters will be explored in this course. Advanced quantification of natural hazards and how this informs modern day risk assessment, mitigation and management will be explored.	4	1,2,3
235701 Māori Values and Resource Management	9	In this applied course students will learn about Māori concepts and values associated with the management of natural resources. Students will gain an appreciation of the importance of indigenous values, and in particular Māori values and management approaches to sustainable resource management. Case studies will be undertaken to develop skills in the management of natural resources.	3	1,2
238700 Life Cycle assessment (LCA) and Footprinting Principles	9	The concept of life cycle thinking and its application to support decision-making for product systems. The course will provide an overview of the principles and methodology for Life Cycle Assessment (LCA) and introduce related environmental footprinting approaches (carbon and water footprinting).	2	NA

Appendix A5 – Victoria University Courses and Papers

Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
BSc In Environmental Studies	7	The theory and practice of working with, in and for environments and communities. You will engage with theories that help make sense of the world around us, and can help guide us towards more just and fair futures.	2	3,4
BGS- Bachelor of Global Studies	7	From politics, law, and human rights, to health and wellbeing, to the environment and sustainability, to business—we understand that the personal is political and that local decisions can have a big impact in the wider world.	1	1
ESCI 111 The Earth System: Understanding our Dynamic Earth and Environment	5	It covers the physical processes that shape the Earth and environment. It emphasises how humans interact with the environment, especially around key issues such as climate change and sea level rise, natural hazards and resource use.	1	1
ESCI 1112 Earth Science for a Changing Planet	5	The foundations of Earth Science, necessary for understanding and mitigating climate change and natural hazards, including sea-level rise, earthquakes and volcanic eruptions. In addition, the course covers environmentally responsible management of natural resources such as groundwater and minerals.	1	1,2
ESCI 132 Antarctica: Unfreezing the Continent	5	A broad introduction to Antarctica, including its history, exploration, weather, geology, fauna and management. Its role in the global climate system is emphasised.	1	1
ESCI 201 Climate Change and New Zealand's Future	6	This course provides a summary of current knowledge on climate change, the evidence and its uncertainties, and possible climate scenarios for the next 50 to 100 years. The course also discusses the influence of climate change on NZ's society, economy and environment, and governmental strategies for adaptation and mitigation.	1	1
ESCI 301 Global Change: Earth Processes and History	7	A study of modern and past Earth environments and the key processes that have shaped them. This course focuses on understanding and interpreting evidence from the geological record for environmental change and using this knowledge to help predict future variability, with specific focus on Antarctica, Southwest Pacific and New Zealand.	1	1,2
GEOG112 Making Places: Geographies of Development, Equity and Social Change	5	This course invites you to engage with key concepts and approaches in human geography and development studies relevant to rethinking and creating more just and equitable worlds. You will make connections between theories, processes and lived experience, and grapple with key contemporary issues such as sustainable transport, climate change migration, social inclusion, and how to address inequalities.	1	1
GEOG114 Sustainability: People and Environment	5	This course combines insights from the physical and social sciences to address environmental problems and solutions. Using the case of climate change, provide examples of the interrelationships between humans and the environment.	1	1

GEOG 214 Environmental Futures for Aotearoa New Zealand	6	This course focuses on issues of particular importance to Aotearoa New Zealand. These include: New Zealand's strategies for managing environmental issues (including reference to institutional frameworks such as the Resource Management Act), the potential for sustainable transport, energy use and urban land use, climate change mitigation and adaptation in New Zealand, and more sustainable management of New Zealand's natural heritage and biological diversity.	2	1
GEOG 220 Hydrology and Climate	6	This course provides the skills and training necessary to explore and understand the core hydrological and climatic processes that cause change within the environment, particularly the role of water. The emphasis will be on providing the skills necessary to interpret the processes controlling the spatial and temporal variability in climate and water availability.	2	1
GEOG 314 Global Environmental Justice	7	All environmental problems have human dimensions. Throughout this course, we will build an understanding of environmental issues as social issues by focussing on environmental justice. We will explore the causes of environmental problems, how problems are understood and experienced by different populations, and how communities work towards fairer environmental futures.	2	1,2,3
GEOG 318 Quaternary Environmental Change	7	Part of this course includes: Develop an understanding of how brief instrumental records of environmental change can be considered in a longer-term historical context and the importance of doing so for managing environmental problems in the future.	2	1
GEOG 321 Ice and Climate	7	An overview of the climate system and the cryosphere, focussing on interactions between the two, covering (1) comprehensive treatment of climate processes over the 2000 years leading into the modern era of anthropogenic influence; (2) case studies of ice-climate interactions; recent behaviour of ice sheets, mountain glaciers and sea ice.	1	1
GEOG 322 Islands and Oceans: People, Power and Place	7	This course examines a range of issues relevant to island and ocean geographies in (post)colonial contexts – such as forced migration, climate change migration, militarization, biodiversity conservation, island tourism the blue economy – through relevant geographic theories including critical political geographies, more-than-human geographies, and feminist geographies. In doing so, it builds on geographic concepts of region, scale, boundaries, and territorialisation. Case studies will largely be drawn from the wider Pacific region, including Aotearoa/New Zealand.	1	1
MAOR 301 Tā Te Māori Whakahaere Rauemi	7	This course starts by looking at Māori ownership and mana over environmental resources and some of the challenges presented by the Crown to that mana. It also looks to the international context and asks what Māori resource management has in common with the management practices of other indigenous peoples.	3	1
PUBL 307 Environmental Policy and Governance	7	This course examines a wide range of environmental, biodiversity and sustainability challenges from policy and governance perspectives, with illustrations from New Zealand and overseas.	2	1
SARC 131 Introduction to Sustainability in the Designed Environment He Timatanga Kōrero mō Te Whakaora i Te Taiao	5	The definitions and macro contexts of sustainability, emphasising the roles, responsibilities and opportunities for professionals in the designed and built environment. The course covers climate and microclimate, resources, materials production, environmental impact and social equity.	1	1,2
SARC 223 Human Environmental Science / Te Āhurutanga o te Taiao	6	The course covers methods of achieving building environmental conditions that relate to the requirements of building users. The course covers climatic analysis and specifications of the environmental performance of buildings, together with the thermal, visual, acoustic, and aerodynamic principles of building elements; plus the services systems required to control and maintain these conditions.	2	1

SCIS 211 Contemporary Issues in Science, Environment and Technology	6	Explore some of the most topical scientific, environmental and technological issues in society. You will learn about the science underpinning each issue, and consider the societal context, implications, and controversies. This online course encourages the development of scientific literacy, understanding of the complexities of science engagement and communication, and consideration of science within a wider societal context.	2	1
SCIS 301 Mātauranga in Society: Engaging with Te Ao Māori for Science, Conservation and Environment	7	This course will consider the role of Māori concepts of mātauranga (knowledge) and pūtaiao (science) in Aotearoa New Zealand in promoting effective practice of science, conservation and environmental management programmes and partnerships. You will be able to apply what you learn about mātauranga and pūtaiao to a broader scientific context. You will better understand these key concepts with a particular focus on how engaging with Te Ao Māori can lead to improved environmental and conservation outcomes.	3	1,3
SCIS 315 Histories of people, environment and science in the Asia Pacific	7	This course places environmental, scientific and technological changes within wider historical contexts, mainly from the Asia-Pacific. You will explore a range of topics, such as introduced plants and animals and their environmental impacts; industrial forms of production and technology, and environmental impacts; western medicine and other ways of ensuring health and well-being; museums, environment and science; conservation and development; genetic organisms.	1	1,2
PGDipEnvStud	8	Learn what shapes our environment so you can help find effective solutions to environmental problems.	3	1,2,3
MCCSP Master of Climate Change Science and Policy	9	Develop your understanding about the physical nature of global climate change. Consider the ethical, scientific, and policy strengths and weaknesses of current and proposed strategies for dealing with it. Explore the political forces working for—and against—addressing this challenge. Gain insight into the economics, politics, behavioural science, and public engagement critical to developing strategies to mitigate and adapt to the effects of climate change at a local, national, and global level.	4	1,4
MEnvSc Master of Environmental Science	9	Learn what shapes our environment so you can help find effective solutions to environmental problems.	3	1,2,3
MEnvStud Masters of Environmental Studies	9	The theory and practice of working with, in and for environments and communities. You will engage with theories that help make sense of the world around us, and can help guide us towards more just and fair futures.	3	3,4
BIOL 420 Conservation Ecology	9	A course that focuses on the unprecedented loss of biodiversity caused by human activities and provides an overview of the wider context of 'Conservation Biology'. It first defines the academic discipline of 'Conservation Biology' followed by an examination of the most common causes of the observed declines and extinctions of species (i.e., the ecology of extinction). It then proceeds to provide students with tools to help develop and implement effective conservation strategies aimed at protecting species at risk of extinction.	3	1,2,3,4
CCSP 401 Physical Basis of Climate Change	9	Students will learn elementary radiative transfer physics, energy balance, concepts of climate forcing, feedback and response. Some elements of planetary circulation will be covered, along with modes of variability. Carbon, methane and nitrogen cycles will be covered in support of understanding the relationship between emissions and concentrations. Introductory atmospheric, oceanic and cryosphere physics will be taught.	3	1
CCSP 402 Climate Change Impacts and Adaptation	9	This course will provide participants with high-level understanding of climate change impacts and adaptation at global, national and local scales. Climate prediction models will be used to examine social and biophysical vulnerabilities to environmental change, and explore policies and measures to minimise impacts, and the potential for adaptation at different scales.	5	1,2,3,4,5

CCSP 403 International Climate Change Policy	9	This course provides an overview of international climate policy, drawing on policy-relevant physical climate change science, economics, game theory, ethics, and international relations theory relevant for climate policy. At the end of the course students will understand and be able to critically analyse key decision-relevant aspects of climate change science and environmental economics, as well as the history, theory and prospects of landmark efforts to govern climate change, domestically and internationally.	4	1
CCSP 408 Climate Policy: Special Topic	9	An applied overview of the practical aspects of addressing climate change in relevant government agencies and organisations in Aotearoa New Zealand and the wider Pacific. Students will gain valuable insights into the dynamic and evolving landscape of climate change governance and adaptation and mitigation strategies.	4	1
CCSP 510 Research Essay	9	This major research project gives the student scope to investigate a climate related topic of particular interest. The investigation will relate to a research question concerning an aspect of climate change science or policy, broadly interpreted. It will consist of a review of the literature, some primary research and analysis, and the leading of a seminar to share understanding of the project's outcomes with fellow students.	2	Topic specific
CCSP 511 Practicum Placement and Project	9	This course has three components: a placement, a research project, and presentation of a seminar. The placement is a period of work with an employer in the field of climate change science, policy or management (e.g. climate-related transport research or policy formulation). The short research project aims to research a particular aspect of the work undertaken, or the host organisation itself, to enrich the student's understanding of the organisation's work. A seminar aims to share understanding among fellow students of the role of the host organisation.	2	NA
ENSC 401 Advanced Topic in Environmental Science	9	This course develops numerical literacy in environmental science. Students will assess methodologies from published literature and apply relevant techniques to collected data, developing scientific, analytical and mathematical skills that can be extrapolated to key environmental problems. Concepts are put into practice using the R computing environment.	3	1
ENVI 402 Perspectives in Environmental Science in Aotearoa New Zealand	8	The Earth is facing escalating pressures on the environment. In this interdisciplinary science course, students will explore contemporary and controversial environmental issues facing New Zealand.	3	NA
ENVI 520 Environmental Management	9	This course critically reviews the theory and practice of contemporary environmental management and governance. Engaging with local and international case studies, including examples of Indigenous-led environmental governance, it considers the different ways in which environmental problems, and their potential solutions, might be understood.	3	1
ENVI 521 Research Methods for Environmental Studies	9	This course provides an understanding of and practice in methods for undertaking research in environmental studies as applied in a range of academic and 'real world' contexts. It covers development of conceptual frameworks, literature reviews, methodological issues, ethics issues and research writing skills.	2	1
ENVI 522 Environmental and Planning Law	9	A practical survey of the law and theories of law as they affect environmental management. Students will be introduced to the basics of environmental legal philosophy and principles applying to the making of law about environmental matters, as well as the basics of the NZ legal system and where environmental laws, the courts and government regulation fit into that system.	2	1
ENVI 524 Environmental Economics for Public Policy	9	The course introduces ecological economics, the environment as 'natural capital' and the economy vis-a- vis society/environment. Covers the mechanics and limitations of the market and government, private/collective choices and their impacts on the environment. Policy-oriented, with focus on relevant core microeconomic theory (market/non-market); heterodox/orthodox approaches; behavioural, institutional and ecological economics.	2	1,2
EnVI 525 Māori Environmental and Resource Management	9	This course aims to build an understanding of Māori perspectives of the environment through an in-depth look at the complex interplay between social, political, environmental and cultural factors that impact on Aotearoa New Zealand's built and natural environments. Strategies and methods for ensuring the adequate consideration of these perspectives are evaluated.	4	1
ENVI 528 Climate Change Issues	9	This course examines issues surrounding climate change mitigation, and examines mitigation initiatives and politics, and differentiated impacts of mitigation across space and time. It will explore mitigation policies, and ground this exploration Te Tiriti o Waitangi and climate justice.	2	NA

PHYG 413 Climate Dynamics	8	Provides an overview of the circulation of the global atmosphere, the basic drivers of the climate system, including the global radiation balance, energy transports in the atmosphere, and how climate varies seasonally and from year to year.	1	1
RESE 422 Sustainability Modelling Techniques	8	This course introduces various approaches to analyse the sustainability of systems, such as cost-benefit analysis, and simulation modelling techniques. It then focuses more deeply on system dynamics modelling and life cycle analysis. Practical work explores simulations using industry-standard software packages and a project to model and investigate the sustainability implications of a renewable energy intervention in the economy – to develop a policy brief.	2	NA

Appendix A6 – Canterbury University Courses and Papers

Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
BEnS- Bachelor of Social and Environmental Sustainability	7	From pollution and climate change to world hunger, explore the biggest global problems humans have caused by injustice towards the environment and communities.	1	1
ARTS 102 Problems, questions, evidence	5	To answer many of the world’s most challenging questions e.g. those related to healthcare, social justice, poverty, climate change, and how we deal with global pandemics we need to understand evidence. The skills you will learn--of evaluating the evidence behind big issues and ideals of the day, and being able to communicate those issues to others--will be of value no matter what your course of study or future walk of life.	2	1
COMS 232 Risk and Crisis Communication	6	This applied course introduces students to a major area of the planning of communication, the management of risk. Risks explored range from individuals' health and safety, disasters, reputational crises and pervasive risks such as climate change.	2	2
ENCN 375 Systems Engineering for a Changing Climate	6	Climate Change Adaptation and Mitigation. Infrastructure systems. Risk and resilience. Ethics and environmental justice. Systems analysis.	4	1,2,3
ENVR 101 Introduction to Environmental Science	5	This course offers a general introduction to environmental science in an interdisciplinary context.	1	1
ENVR 209 Environmental Science and Resource Management	6	This course explores the debates and issues in environmental science and resource management around the core theme of agriculture and the environment. There is an emphasis on developing solutions to environmental issues.	1	1,2
ENVR 302 Carbon and Environmental Change	6	This course explores our changing environment, driven largely by our linear economy (take-make-dispose). Particular emphasis is given to the ‘carbon currency’ and how carbon drives environmental change. There is an emphasis on developing solutions to environmental issues, especially to climate change adaptation and development of a circular economy. Tikanga Maori aspects of environmental change will be covered.	4	1,2,3,4
GEOG 106 Global Environmental Change	5	Global Environmental Change takes a geographic (holistic) approach to examining key environmental challenges.	1	1
GEOG 201 Environmental Processes: Principles and Applications	6	The course explores the fundamental principles and applications of knowledge related to the surface of the earth in the sub-disciplines of geomorphology, climatology and hydrology. Systems studied include landforms, glaciers, climate, and rivers.	1	1
GEOG 215 Environmental Hazards and Disasters	6	This course provides an understanding of environmental hazards and disasters, with a particular focus on flooding and coastal hazards and the related impacts on human communities. Examples will be drawn from New Zealand, which will include a consideration of Maori experiences of and responses to disasters, and from overseas.	3	1,2,3
GEOG 311 Coastal Systems	7	This course explores the processes that form and change coastal environments in New Zealand, the Pacific and worldwide. Topics examined include a selection of: sea level change today and into the future, waves and currents,	2	1,2

GEOG 312 Snow, Ice and Climate	7	This course examines the physical processes involved with the formation and evolution of mountain glaciers and seasonal snow, including processes such as surface mass balance, dynamics and hydrology. The course develops knowledge by drawing on key research, and encourages students to critically evaluate published work. The supporting lab programme will enable students to develop a range of transferable skills by working with real data and equipment, for example, ground penetrating radar (GPR), snowpit analysis, and simple glacier models.	1	1
PACS 221 Pacific Sustainability and Climate Resilience	6	This course examines ways in which community-based and indigenous innovation have been used to build up strategies of adaptation and resilience in oceanic communities, focusing on the Pacific. Deconstructing the deficit narratives characterising the Pacific Islands as inherently susceptible and reconceptualising the concepts of resilience and sustainability for socio-ecological justice is a key component of this course.	5	3,4
PHYS 330 Environmental and climate modelling	7	Students will learn the fundamentals of modelling the Earth's climate system. Using the Python programming language, students will develop parameterisations for simple climate models, and learn how to run more advanced models. Students will learn how models are used to support decision making through geoinformatics and science in the areas of: climate change;	2	1
SENS 101 Introduction to the Principles and Concepts of Sustainability	5	Sustainability is a popular but contested concept. At its most basic it refers to the maintenance of systems, processes, and/or practices over time. This foundation course introduces students to transdisciplinary ways of understanding the contested history of ideas about sustainability in diverse fields of socio-ecological politics, and philosophy, Indigenous knowledge and environmental law, governance and leadership, and economics and environmental management.	1	1
SENS 201 Systems Thinking for Sustainability	6	Students will develop understanding of the way systems thinking is used in sustainability studies, including in local, regional and international contexts. Students are introduced to some of the strengths, limitations and major challenges inherent in this approach to helping us address complex interdisciplinary problems.	2	1,2,3
Postgraduate Certificate in Science majoring in Environmental Science	7	Environmental Science is an interdisciplinary approach to the study of the environment, incorporating its structure and functioning, and human interactions with the environment.	3	1
Postgraduate Diploma in Science majoring in Environmental Science	8	Environmental Science is an interdisciplinary approach to the study of the environment, incorporating its structure and functioning, and human interactions with the environment.	3	1
BE (Hons)	8	Environmental Process Engineering is ideal for environmentally-minded engineers who want to improve our planet by designing systems that treat water, air, and soil.	3	1,2,3
BSc (Hons) in Environmental Science	8	Environmental Science is an interdisciplinary approach to the study of the environment, incorporating its structure and functioning, and human interactions with the environment.	3	1
BEnvSci (Hons)	8	Environmental Science is an interdisciplinary approach to the study of the environment, incorporating its structure and functioning, and human interactions with the environment.	3	1
MSc majoring in Environmental Science	9	Environmental Science is an interdisciplinary approach to the study of the environment, incorporating its structure and functioning, and human interactions with the environment.	3	1
MDRR	9	Environmental Science is an interdisciplinary approach to the study of the environment, incorporating its structure and functioning, and human interactions with the environment.	4	1
BIOL 427 Global Change Biology	8	This course will address selected major issues concerning the role of biological processes in the Earth System and the impact on these of human activities (global change). Discussion will include carbon and nutrient cycling in terrestrial and marine ecosystems, the impacts of past and future climate change on biota, the significance of biodiversity loss on ecosystem processes and strategies to mitigate climate change.	3	1,2,3
DRRE 401 Introduction to Disaster Risk and Resilience	8	An introduction to disaster risk and resilience disciplines, theories and practices. It explores drivers of disaster risk and covers national and international frameworks for disaster risk reduction.	4	1,2

ENVR 402 Carbon and Environmental Change	8	This course explores our changing environment, driven largely by our linear economy (take-make-dispose). Particular emphasis is given to the 'carbon currency' and how carbon drives environmental change. There is an emphasis on developing solutions to environmental issues, especially to climate change adaptation and development of a circular economy. Tikanga Maori aspects of environmental change will be covered.	4	3
ENVR 411 Case Studies in Environmental Science	8	This course provides a series of case studies, which explore basic concepts in environmental science and governance and allow students to explore environmental processes, their interactions and their management.	2	1
ENVR 415 Environmental Risk Assessment	8	This course focusses on methodologies used to assess environmental effects and risks, including environmental impact assessments, environmental risk assessment, cultural impact assessments and the cultural health index. Risk communication to diverse audiences is an important skill for Environmental Scientists. In this course students will develop skills in risk assessment and communication.	4	2, 3,4
GEOG 404 Resource and Environmental Management in New Zealand	8	This course provides a deep and yet practical understanding of the processes involved in resource and environmental management in New Zealand, including the principles of kaitiakitanga. One of the learning outcomes includes recognising that environmental management systems operate within a series of political and economic constraints which limit the nature of approaches and options considered; and appreciate the existence of alternative perspectives to understanding and responding to environmental issues.	2	3,4
GEOG 409 Coasts and Rivers: from Natural Processes to Urban Environments	8	This course explores coastal and fluvial geomorphic processes and how they interact with urban environments. Understanding these processes is essential for effective resource and environmental management, as well as for building resilient settlements. Core topics will include river and coastal geomorphology; hydrology and hydrodynamics; flooding from coastal, fluvial and pluvial sources; catchment processes; river mouth environments; sea level rise.	2	1,2,3
HLTH 403 Environmental Health	8	Environmental health is an integral aspect of the health of a community. Risks to environmental health include pollution, unsafe foods, and infectious diseases, and many of these risks are increasing as a result of growing populations globally, and the effects of climate change. This course provides the foundation for students to understand environmental health.	1	1

Appendix A7 – Lincoln University Courses and Papers

Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
BEM (Bachelor of Environmental Management)	7	Bachelor of Environmental Management Taking on environmental issues requires multi-disciplined learning, critical thinking and sound practical experience. Lincoln University's Bachelor of Environmental Management blends content from the physical and social sciences, fostering your understanding of the connections between environment, economy, society and culture. It prepares you with the principles and strategies to help address urgent local and global challenges, and how to apply these to different contexts.	2	NA
ENSC 301 Climate Change and Land Use	7	Learn the fundamentals of the climate system and climate change, and the projected impacts of climate change on New Zealand's land-use, while exploring how to mitigate future greenhouse gas emissions and build resilience.	3	1,2
SOSC 301 Advanced Soil Science	7	You'll grow your knowledge of advanced soil science, delving into biogeochemistry and climate change science, as well as pedagogy (soil information systems) and then apply that science to sustainable land use issues.	1	1,2,3
ENSC 601 Advanced Climate Change and Land Use	8	Learn the scientific concepts underpinning the climate system and climate change, what the drivers of that change are and how New Zealand will be affected, and examine how to mitigate the impact of emissions and build resilience.	4	1,2,3

Appendix A8 – Otago University Courses and Papers

Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
BSc in Environmental Management	7	Environmental Management teaches you about the science of environmental systems and problems. It covers the wider social, economic and political context, including the requirements of environmental legislation. Environmental Management gives you skills and knowledge to find creative responses to environmental challenges.	2	NA
AGRI 101 Agricultural Innovation	5	Coping with climate change and reducing the environmental impact of farming will require innovative solutions, new expertise and ways of thinking.	3	1,2,3
BTNY 203 Marine and Freshwater Botany	6	The diversity, physiology and ecology of marine and freshwater plants, algae and cyanobacteria. Understand the role of these organisms in marine and freshwater ecosystems, including the impact of toxic bloom formation, invasive species and global climate change.	1	1,2,3
GEOG 282 Climate Change: Present and Future	6	Principles of meteorology, with particular reference to weather systems; climate variability and change; projected future trends; climate change policy;	1	1
ENVI311 Understanding Environmental Issues	7	An examination of contemporary environmental issues using concepts of scientific understanding, social, political and cultural construction and contestation, and intervention and transformation strategies. Recognition of different perspectives	3	3,4
ENVI 312 Interdisciplinary Aspects of Climate Change	7	The scientific basis for, impacts of, and law and policy responses to climate change.	1	1
GEOG 388 Climate Change: Present and Future	7	Principles of meteorology, with particular reference to weather systems; climate variability and change; projected future trends; climate change policy;	1	1
LAWS 351 Climate Law and Policy	7	An introduction to Climate Law to include the international treaty regime, core domestic legislation and case law, and examples of other jurisdictions legal responses.	1	1
PACI 310 Pacific People, Climate Change and Power	7	Explores diverse perspectives of climate change in the Pacific, focusing on power dynamics, activists and community movements, intergenerational narratives and research through the lenses of relevant Pacific methods and methodologies.	Not offered 2024	1
PhSI 243 Environmental Physics	6	Basic physical processes of the Sun, the atmosphere, the oceans and the Earth. The green-house effect and the role of energy processes. Opportunities for mitigation including new energy technologies.	1	1
POLS 330 Politics of Climate Change	7	Framed by mātauranga Māori, post-colonial political theory, and other critical perspectives, this course examines the politics of climate change and climate change justice.	3	1
Master of Science in Environmental Studies or Management MSc	9	Environmental Management teaches you about the science of environmental systems and problems. It covers the wider social, economic and political context, including the requirements of environmental legislation. Environmental Management gives you skills and knowledge to find creative responses to environmental challenges.	2	1
EMAN 410 Energy Policy	8	Contemporary case studies in the energy industry: energy trading and pricing; energy system and plant planning; demand-side management; advanced energy technology; environmental impact analysis; Resource Management Act. These topics are related back to the overarching issue of sustainable development and climate change, to which energy utilisation is fundamentally linked.	1	1
FINC420 Climate and Energy Finance	8	An examination of climate and energy finance placed in their broader energy and environmental policy context. How can energy system decarbonisation be financed, and how effectively and efficiently are energy and carbon markets functioning?	1	NA

FINC 498 Advanced Modelling of Climate Finance Risks	8	Advanced modelling of the financial impacts of climate change-related risks. Data extracting and processing tools and advanced forward-looking modelling skills such as climate stress testing and geospatial finance risk modelling.	4	1,2
GEOG 460 Climatology	8	Emphasis in this course is placed on the methods and techniques used to investigate atmospheric processes in mountainous terrain. In particular, students will develop an understanding of how to deploy atmospheric instruments, as well as being given the opportunity to develop their quantitative skills to analyse both observational and modelled climate data	2	1,5
Laws 421 International Environmental Law	8	This paper gives an introduction to the key principles and sources of international environmental law and an analysis of the international environmental law relating to topics including climate change, ozone depletion, biodiversity, migratory species, trade in endangered species, whales, Antarctica and ecocide.	1	1
MANT 437 Organisations and Sustainability	8	Examines how businesses are responding to sustainability and climate change in the current socio-economic context, and encourages students to create alternative scenarios of future business worlds.	3	1,2
MANT 447 Contemporary Issues in Sustainable Business	8	Focuses on interactions between organisations, society and the environment by exploring concepts of sustainability at macro and micro levels. Climate change and sustainable transitions are considered in theory, research and organisational practice.	3	1
LAWS 521 International Environmental Law	9	An introduction to the principles and sources of international environmental law, and an investigation of current issues including the impact of and on state sovereignty, and tensions between trade and environment.	1	1
SURV 554 Advanced Environmental Engineering	9	A discussion of the cause and impact of environmental effects and how environmental engineering is involved in providing the means of avoidance, remediation or mitigation of adverse effects on the environment.	4	1,2,3

Appendix A9 – Wānanga Courses and Papers

Tertiary Institution	Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
Te Whare Wānanga O Awanuiārangi Whakatane	Te Aho Pūtaiao: Bachelor of Environmental Studies		Te taiao, our natural environment, needs positive action to maintain and protect our climate and natural resources. If you're interested in environmental issues and sustainability, we offer a range of programmes that respond to the climate challenges that the world is facing. Through these programmes, our taura are helping to shape the next generation of kaitiaki and preserve our environment for future generations.	5	NA
	TAI 577 Climate Change-Introduction	5	This kōwae ako provides an introduction to climate change concepts, and a broad understanding of climate change terms including human activity effects on the environment.	2	1
	TAI 578 Environmental Sustainability & Technology – Concepts	5	This kōwae ako introduces environmental sustainability concepts and the role of technology in providing sustainable options. The kōwae ako also introduces taura to the impact of everyday processes on the environment.	1	1,2
	TAI 677 Climate Change – Societal and Scientific Impacts	6	This kōwae ako gives taura opportunities to distinguish societal and scientific impacts of climate change, and validate possible quality controls, signs, and indicators of climate change.	4	1,2
	TAI 678 Environmental Sustainability & Technology – Solutions	6	This kōwae ako requires taura to demonstrate their ability to think critically when dealing with various pieces of information and provide sustainable solutions that are fit for purpose. The kōwae ako also gives taura the opportunity to review new types of technology on a global scale.	3	3
	TAI 777 Climate Change- Mitigation	7	This kōwae ako investigates human displacement and infectious diseases. The kōwae ako also investigates species adaptation, pest movement and management as a result of climate change. Taura will also identify the effects of pH levels in the ocean and the potential global impact of ocean acidification.	4	2,3
Te Wānanga O Raukawa	Heke Kaitiakitanga Pūtaiao Diploma in Environmental Management	5	This programme will take you on a journey of self-discovery instilling environmental values consistent with kaupapa and tikanga Māori, as you equip yourself with the necessary tools to ensure the survival of our taonga tuku iho for generations to come.	3	1
	Poutuarongo Kaitiakitanga Pūtaiao Bachelor of Environmental Management	7	Looks at how to uplift and maintain the well-being of our environment from a kaupapa Māori perspective and is ideal for anyone wanting to enter the environmental sector or make a significant contribution to the survival of our natural resources from Papatūānuku to Ranginui.	4	1,2,3

Appendix A10 – Polytechnics Courses and Papers

Tertiary Institution	Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
Toi Ohomai	Sustainable Land-use Practices	7	Students will assess the scientific basis for sustainable resource use and learn new methods of managing global land resources using the best available technology.	4	1,2,3
	Diploma in Environmental Management	5	Learning about ecosystems, conservation issues, sustainable management of land, animals, and plant life, as well as the management strategies that promote the conservation of biodiversity and address bio-security.	2	1,2,3
	Diploma in Environmental Management	6	Learning about ecosystems, conservation issues, sustainable management of land, animals, and plant life, as well as the management strategies that promote the conservation of biodiversity and address bio-security.	2	1,2,3
	Bachelor of Applied Science (Biodiversity Management)	7	Learning about ecosystems, conservation issues, sustainable management of land, animals, and plant life, as well as the management strategies that promote the conservation of biodiversity and address bio-security.	2	1,2,3
Otago Southern			No environmental courses		
	Certificate of Environmental Management	4	New course for 2025		
	Bachelor of Environmental Management	7	The impact of human activities on our planet is sadly, becoming increasingly obvious. Learn how to manage human activity and create a sustainable balance with nature. Environmental Management is an all-encompassing area which looks to find the answers to a sustainable existence.	2	1,2,3
	EM100 Data Management and Introductory Biometrics	5	Provides students with mathematical, analytical, and computing skills sufficient to achieve an understanding of how to source, collect, manipulate, analyse, interpret, and present data relevant to environmental sciences.	2	1
	EM101 Resource Management and Environmental Law	5	Introduces students to the concepts, principles, and applications of environmental law, its historical and current context, and the various Acts that currently govern environmental law and related legislation within New Zealand society.	1	1
	EM104 Ecological Principles and Conservation in New Zealand	5	Provides students with an understanding of the ecological and biological principles fundamental to New Zealand ecosystem management.	2	1
	EM105 Marine and Freshwater Ecology	5	Provides a basic knowledge and understanding of the ecological factors which characterise coastal, marine, fluvial, and lacustrine environments. The potential impacts of various management activities will also be explored.	1	1,2
	EM107 Environmental Science 1: Introduction to Chemistry	5	Students will acquire knowledge of the basic concepts of chemistry as it applies to environmental management. On successful completion of this paper, the student will be able to describe the fundamental chemical concepts of atomic theory, chemical bonding and chemical reactions, demonstrate knowledge of the major chemical cycles and their influence on the environment and have an understanding of the phenomenon of pH and its relevance to environmental science.	1	1
	EM110 Introduction to Renewable Energy	5	Introduces students to concepts of sustainability and renewable energy (RE) in the context of energy production and utilisation. Reviews existing and emerging renewable energy sources.	1	NA
	EM200 Research and Statistics	6	Prepares students for professional practice by presenting research as a unifying strategy for practice, theory, and scholarship. Both scientific and interpretive knowledge will be drawn upon in preparing the student to become a competent practitioner of research. Students will also be assisted in developing skills as a beginning researcher.	1	NA
EM202 Earth Science and Environmental Management	6	Students will learn to relate earth architecture, earth cycles, and earth geomorphology to the current environmental situation. They will investigate the relationship between surface features, surface processes, chemical constraints, and ecology and habitats. This paper introduces students to the concepts and applications of remotely sensed data and the application of these data to geological and environmental problems.	2	1	

	EM203 Land and Freshwater Environmental Management	6	Students will consider the issues that influence environmental management of land and freshwater at global, national, and local scales. This includes consideration of political, economic, social, and environmental and regulatory factors influencing decision making.	2	1
	EM205 Marine and Coastal Environmental Management	6	Students will consider and assess the issues that influence marine and coastal environmental management at a global, national, and regional level.	2	1
	EM206 Conservation and Environmental Management	6	It expands on concepts pertaining to ecological theory and ecological processes through time and introduces concepts of habitat restoration and protection.	3	1,2
	EM208 Environmental Science 2: Organic Chemistry, Biochemistry, Genetic and Microbiology	6	Students will acquire knowledge of the basic concepts of organic chemistry, biochemistry, microbiology and genetics as they apply to environmental management.	1	1
	EM210 Renewable Energy Technologies	6	This paper expands on EM110 and extends students' knowledge of the concepts and principles associated with renewable energy technology with an emphasis on commercially available and small-scale applications. It includes terminology and measurement units employed and basic manipulation of data relating to energy systems.	1	NA
	EM211 Sustainable Food Systems 1	6	This paper examines the issues, theories and concepts that are involved in the development of sustainable food systems. This paper equips students with in-depth understanding of different types of food systems from local to global.	1	1
	EM300 Research I	7	Students will apply their knowledge and gain industry experience within an environmental management related context. Students will prepare a proposal for an industry related project which will be research orientated and beneficial to the environmental management context.	2	NA
	EM301 Research II	7	This paper will provide an opportunity for students to extend their knowledge and gain further industry experience with the environmental management context previously selected. Students will complete a project which will be research orientated.	2	NA
	EM304 Advanced Environmental Impact Assessment and Monitoring	7	Introduces students to the concepts, principles, and skills associated with environmental impact assessments.	3	2
	EM306 Case Studies in Environmental Management and Sustainability	7	The paper emphasises governance at the national and local level coupled with the legal, scientific, management, economic, and societal constraints in relation to various environmental problems confronting the world, the nation, and Southland. Students will be encouraged to explore issues from various points of view (society at large, local iwi, various management levels in the public and private sector, and stakeholders) and to propose consultation methods, solution pathways, management indicators and scientific solutions.	3	3,4
	EM310 Energy Auditing	7	Provides students with knowledge and skills in procedures required to conduct an energy audit. This will involve site inspections, identifying and documenting energy requirements for that site, recording energy utilisation details, and measuring, quantifying, and reporting energy consumption needs.	1	NA
Eastern	NZ Diploma in Environmental Management	5	The programme focuses on environmental issues, their impact on societies and ecosystems, and their mitigation.	3	1,2,3
	ENV5 100 Sustainability 101	5	Principles and models of sustainability, historic and contemporary Māori sustainability perspectives and practices and contemporary environmental issues.	3	1
	ENV5 200 Environmental Conservation in Aotearoa	5	Legislation, context and community	1	1
	ENV5 400 Environmental Sampling	5	Knowledge and skills required for environmental sampling to monitor ecosystems.	2	5
	NZ Diploma in Environmental Management (Terrestrial)	6	This level 6 diploma will prepare you for roles in conservation, resource management and environmental monitoring, research and consulting, and leads on to the Bachelor of Applied Science (Biodiversity Management).	2	1
	ENV6 100 Freshwater Ecology and Monitoring	6	This course aims to develop learners' knowledge about freshwater environments and skills in related sampling and analysis	2	1,5

	ENV6 010 Environmental Monitoring	6	This course aims to develop learners' knowledge and skills to plan, analyse and present data relevant to environmental monitoring.	3	1,5
	ENV6 700 Principles of Ecology	6	This course covers the principles of ecology, including adaptation to the environment, intra and inter specific interactions, community and ecosystem dynamics, and biogeography.	2	1,2,3,4
	RESE6 Statistics and Research Preparation	6	This course aims to develop learners' introductory knowledge and skills of applied research. It includes scientific method and an introduction to scientific writing and statistical methods.	2	NA
	Bachelor of Applied Science (Biodiversity Management) Levels 5 & 6 from list	7	In this degree programme, you will learn about ecosystems, conservation issues, sustainable management of land and plant life, as well as the management strategies that promote the conservation of biodiversity and address biosecurity.	3	1,2,3
	NCS17194 Restoration Ecology	7	To enable learners to use ecological theory to the practice of restoring damaged ecosystems, using existing restoration projects as reference sites.	4	1,2,3
	NCS17732 Conservation Science	7	To understand how the knowledge of genetics and population dynamics can be used to influence conservation and wildlife management decisions.	2	1
	NCS16739 Behavioural Ecology	7	This course aims to develop learners' understanding of the ecological and evolutionary basis of animal behaviour, and the role behaviour plays in enabling animals to adapt to their environment.	2	1
Waikato WINTeC			No environmental courses		
Wellington WelTec			No environmental courses		
Nelson Marlborough NMIT	Te Tai Ao and Environmental Management	5	Students of this course will learn about the effects the aquaculture industry can have on the environment, as well as what principles and activities are used to minimise those environmental effects. The students will also learn how to develop, implement and supervise workplace practices such that minimise aquaculture effects on the environment.	1	1,2,3
	Tikanga Tiaki Moana and Aquaculture and Marine Conservation Science	6	To provide a broad understanding of the scientific bases of biological conservation and aquaculture. Students will understand many of the ecological principles underlying the conservation of biodiversity.	1	1
	Bachelor of Aquaculture and Marine Conservation	7	To understand the ways in which human society and aquaculture impact of on natural ecosystems and habitats along with an understanding of the use of bioremediation in restoring disturbed and degraded habitats.	1	1,2,3
	Postgraduate Diploma in Sustainable Aquaculture	8	This programme will give you an advanced theoretical understanding and the technical and practical skills related to sustainable aquaculture practices.	1	1,2
Whitireia			No environmental courses		
NorthTech	NZ Diploma in Environmental Management	5	This programme will teach you the principles and techniques involved in environmental management. You'll gain a practical and theoretical knowledge of terrestrial and marine ecosystems, flora and fauna in New Zealand and learn about sustainability, environmental issues, monitoring and conservation techniques. You'll also get involved in the protection and restoration of local natural, rural and urban environments.	3	1,2,3
	NZ Diploma in Environmental Management	6	In this programme you will gain an ecological knowledge of Northland's terrestrial, freshwater and coastal ecosystems and learn about challenges to biodiversity and resource management, as well as monitoring and evaluating ecosystem dynamics. You'll also get involved in the protection and restoration of local natural, rural and urban environments and get the chance to make valuable contacts within your chosen field through work placement.	3	1,2,3,4,5
	Bachelor of Applied Science (Biodiversity Management)	7	You'll develop practical skills to monitor ecosystems and analyse, comprehend and evaluate results, understand how to engage appropriate resources for environmental investigation, and learn to critique social, cultural and policy frameworks and their effect on management decisions.	3	3,5
WITT Te Pūkenga	New Zealand Certificate in Conservation (operations)	4	Get the technical skills and gain practical conservation knowledge to carry out operational conservation work and provide sustainable stewardship of the environment while working respectfully with Te Tiriti o Waitangi, local iwi or hapū tikanga and kawa.	2	1
	CCO4.001 New Zealand Ecology and Wāhi	4	To prepare graduates for delivery of practical conservation in the context of ecological restoration by providing background ecological understanding and tools and skills to be able to investigate an ecosystem and deliver sound conservation outcomes.	2	1,2,3

	CCO4.005 Kaitiakitanga and Rangatiratanga	4	To prepare learners to engage in the role of Kaitiaki in a manner consistent with the perspective of tangata whenua. To enable learners to examine historical and contemporary examples of tino rangatiratanga and te Taiao and relay this to their own conservation practice, whilst following kaupapa Māori.	2	1,2,3
	NZ Diploma in Environmental Management	5	The programme focuses on environmental issues and the human impact on ecosystems. You will learn practical skills in data collection, surveying and sampling methods, restoration and conservation.	2	1,2,3
	DEN5.101 Sustainability 101	5	This course aims to develop students' knowledge of models of sustainability and contemporary environmental issues.	1	1,2
	DEN5.102 Environmental Conservation in Aotearoa: Legislation, Context, Community	5	This course aims to develop students' knowledge of environmental conservation in Aotearoa in terms of legislation, context and community.	1	1
	DEN5.103 Environmental Sampling	5	This course aims to develop students' knowledge and skills required for environmental sampling in order to monitor ecosystems.	2	5
	DEN5.105 Environmental Science	5	This course aims to develop learners' abilities to critically assess environmental issues using scientific evidence to understand the effects of human activities and resource use throughout the environment.	3	1,2,3
	DEN6.101 Freshwater Ecology and Monitoring	6	This course aims to develop students' knowledge about freshwater environments and skills in related sampling and analysis.	2	1,5
	DEN6.105 Sustainable Futures	6	This course aims to develop students' knowledge of current trends in sustainability and topics in environmental management.	1	1
	DEN6.106 Principles of Ecology	6	This course covers the principles of ecology, including adaptation to the environment, intra- and interspecific interactions, community and ecosystem dynamics, and biogeography.	1	1,2
Ara Canterbury			No environmental courses		
UCOL	New Zealand Certificate in Conservation	4	This is designed to provide you with the skills and knowledge required to carry out operational conservation work.	2	1,2,3
Open Polytechnic of NZ	Bachelor of Applied Science (Communication and Environment)	7	This double major will give you strategic understanding and communication skills. You will be able to analyse and report on environmental issues in the private and public sectors.	3	3,4
	Bachelor of Applied Science (Environment)	7	This degree will allow you to recognise and analyse the causes of environmental problems facing New Zealand and the global community, apply environmental principles and legislation to practical situations involving the protection and use of natural resources, evaluate policy and management approaches to resolve environmental problems, and contribute to identifying and implementing effective actions to achieve sustainable environmental outcomes.	4	1,2,3,4
	72191 Global Environmental Studies	5	This course is designed to provide you with an understanding of current global environmental issues. You will examine the major environmental issues facing the world today and critically examine responses and solutions developed by international fora.	1	1
	72196 Introduction to New Zealand Ecology	5	This course is designed to provide you with an understanding of ecological processes and the key characteristics of New Zealand's terrestrial and aquatic environments. You will examine critical factors underpinning ecological sustainability, explore current issues in conservation and evaluate approaches to ecosystem management in New Zealand.	1	1,2,3
	72392 Environmental Management Systems and Strategies	7	You will examine the theory and practice of corporate environmental management and apply environmental principles to evaluate current practices. You will also use your knowledge to critically evaluate the contribution of corporate environmental management to sustainability.	2	3
	72395 Environment and the Economy	7	This course links environmental decision making with the economy. It considers how monetary value can be assigned to environmental goods and services.	2	NA
	72396 Environmental Perspectives and the Media	7	Concern about environmental issues is fuelling vigorous policy debates. These debates raise questions about the social and ethical limits of technology, the role of science in decision-making and conflicting views about development.	1	NA
	72923 Conservation and Natural Resources Law	6	You will explore the purpose and operational provisions of the legislation and examine significant resource management issues. You will also consider the effects of international law on New Zealand's environmental management framework.	2	1
	72294 Environmental Monitoring and Reporting	6	Concern about environmental issues is fuelling vigorous policy debates. These debates raise questions about the social and ethical limits of technology, the role of science in decision-making and conflicting views about development.	2	1

	72296 Environmental Impact Assessment	6	In this course you will explore the development of EIA and look at its practical application in New Zealand. You will also look at common practice problems and explore the critical role of the public in EIA processes.	2	2
	Graduate Certificate in Sustainable Management	7	This qualification will give you practical skills in environmental law and management.	2	1
	Graduate Diploma in Sustainable Management	7	This qualification you will be able to apply integrated resource management solutions to a diverse range of complex environmental problems.	2	1,2,3
Manukau			No environmental courses		
UNITEC	Bachelor of Applied Science (Biodiversity Management)	7	Find out how society views and influences the natural environment, discover how social, cultural, and policy frameworks influence management decisions, and develop plant identification knowledge and skills.	3	NA
	NSCI5731 Principles of Ecology	5	To develop an understanding of the interactions that occur between organisms and their environment.	1	1,2
	NSCI5735 Science and Society	5	To explore ways in which Science and human society have developed and interacted throughout history; to equip students with an appreciation that science takes place within a broad cultural framework and to recognise the validity of differing points of view.	1	1
	NSCI6746 Ecological Risk and its Mitigation	6	To apply ecological theory and techniques to the assessment of environmental risks from human impacts and their appropriate mitigations, including the impacts of invasive species and biosecurity strategies for the protection of New Zealand.	2	1,2,3
	NSCI6745 Ecological Evaluation and Management	6	To develop an understanding of how the scientific evaluation (within the context of international and national legislative frameworks) and assessment of ecosystems or species supports decision-making and conservation management practices.	2	2
	Postgraduate Diploma in Applied Science(Biodiversity Management)	8	The world is facing two major environmental issues – climate and biodiversity loss. To tackle these specific issues in Aotearoa, New Zealand, the government is backing local and national initiatives – and they require biodiversity professionals with applied knowledge and field experience to lead the way.	3	NA
	Partnership and Stakeholder Engagement (NSCI8001TP)	8	The aim of this course is to develop the knowledge, skills and competencies to engage with Maori, other indigenous peoples and stakeholders.	2	2,3
	Master of Applied Science (Biodiversity management)	9	The world is changing rapidly. Climate disruption is happening faster than animals, plants, and human communities can adapt – unless we take extraordinary action. To lead the charge, Aotearoa, New Zealand needs biodiversity professionals who think innovatively, take action, and move seamlessly from the lab into the field.	3	1,2,3
	Biosecurity: Strategy and Implementation (NSCI8003TP)	9	The aim of this course is to develop the knowledge, skills and competencies to manage the effective and efficient planning and implementation of pest operations, integrating current practice and Māori traditional values	3	1,2,3
	Environmental Monitoring (NSCI8007TP)	9	Students gain experience of field research within a variety of taxonomic groups, habitats, locations - from the mountains to the sea. Students will learn how to translate theoretical understanding of monitoring to practical action, tackling complex issues to enable successful monitoring programmes.	3	3
	Human Impacts: Managing Waste, Energy and Resources (NSCI8010TP)	9	The aim of this course is to develop the knowledge, skills and competencies to explore current environmental issues within a geopolitical context, developing strategies to achieve long-term economic, social, cultural, health and environmental outcomes.	2	1,2,3
Tai Poutini	New Zealand Certificate in Conservation	4	This is designed to provide you with the skills and knowledge required to carry out operational conservation work.	2	1

Appendix A11 – International Universities Courses and Papers

Tertiary Institution	Course/Paper Name	NZQF Paper Level	Direct Relevance to Climate Adaptation Definition	Direct Relevance to Climate Adaptation Definition	Adaptation Process Assessment
Sydney University	Graduate Certificate in Sustainability		The Graduate Certificate in Sustainability will equip you to further your career in diverse areas from environmental science to finance, from law to urban planning, and from sustainable building design to public health. If you are interested in increasing your understanding of complex sustainability challenges and discovering tools to measure, report on and identify solutions to these challenges, you'll gain these skills with the Graduate Certificate.	3	1,2
	Bachelor of Science Environmental Studies Major		The environmental science program will provide you with the understanding and skills needed to find solutions to environmental problems, combining geosciences, agriculture and biology. You will develop the knowledge and skills to find solutions to complex environmental problems.	2	3
	Graduate Diploma in Sustainability		The Graduate Diploma in Sustainability will equip you to further your career in diverse areas from environmental science to finance, from law to urban planning, and from sustainable building design to public health.	3	1
	Graduate Certificate in Architectural Science (Sustainable Design)		Develop your skills in understanding the increasingly important area of efficient and environmentally responsive buildings, both new build and retrofitted. The course integrates units from the architectural sciences and emphasises rigour, quality, and evidence-based design.	3	1,2,3
	Graduate Diploma in Marine Science and Management		Climate change, alongside an increase in human development pressures and climate variability, presents a pressing demand for coastal and marine experts to mitigate these adverse effects on coastal landscapes and marine ecology.	3	1,2,3
	Master of Sustainability		If you are interested in increasing your understanding of complex sustainability challenges and discovering tools to measure, report on and identify solutions to these challenges, you'll gain these skills with the Master of Sustainability.	3	1,3
	Master of Marine Science and Management		Our graduates can be found in government agencies that manage coastal and marine resources and environments and also in consulting companies that seek coastal and marine specialists. Climate change, alongside an increase in human development pressures and climate variability, presents a pressing demand for coastal and marine experts to mitigate these adverse effects on coastal landscapes and marine ecology.	4	1,2,3,4
	Master of Agriculture and Environment		The Master of Agriculture and Environment trains you to solve the challenges of the 21st century: food security, climate change, and management of carbon, water and the environment. With professional experience in the lab and in the field, you'll be ready to contribute to a booming and vital sector.	2	1,2,3
	Master of Environmental Science		The Master of Environmental Science degree is a launch pad into leadership for professionals in the environmental sector. Drawing on a wide range of science-based disciplines and applications, the Master of Environmental Science gives you a grounding in basic environmental issues.	3	1,2
	ACCT3016: Sustainability Management and Reporting		This unit of study explores the theory and rapidly developing practice of organisational sustainability, considering its diversity of concerns, initiatives and impacts. Organisational sustainability may incorporate actions related to climate change, carbon pollution, water, waste and rethinking the product-base, as well as initiatives targeted at employees, customers, investors and/or the broader community.	3	1
	ENVI2122 Environmental Governance and Assessment		This unit builds on conceptual understandings of the environment, environmental issues and critical thought developed in first year to explore environmental regulation in an Australian context. It navigates environmental and ecological economic thought and connects this to impacts. In the latter part of the semester the concept of impact assessment is introduced to build on the legal and economic knowledge and investigate the history, strengths, weaknesses and potential of various forms of assessment to achieve improved environmental outcomes.	1	1,2,3
	AFNR5801 Climate Change: Process, History, Issues		This unit provides students with an overview of current debates and approaches to understanding and quantifying interactions between the biosphere, oceans and atmosphere, as used around the world, and the consequences of those interactions for climate. The unit considers climate change on a variety of timescales.	1	1,2
	GEOS2111: Hazards, Climate Change and Disasters		The unit provides an essential framework for understanding the classification of natural hazards within Earth systems and explores key examples of geological, atmospheric, hydrological and biological hazards and explores the social relations and processes that turn hazard events into disasters. Given the vast majority of disasters are climate and weather-related, basics of weather, climate and climate change will be explored.	3	1

Climate Change: Problems, Possibilities - AMST2607	Combining American history, literature, and politics, this unit examines environmental changes within and beyond the United States. It considers how different perspectives on land management, human needs, and state policies can inform the various uses of natural resources. From buffalo to agri-business, railroads to oil wells, Standing Rock to Three Mile Island, the unit uses a variety of sources to think about how people have understood their relationship with the environment. The unit asks questions about food and water supplies, conservation, urban planning, and the complex roots of the present climate emergency.	3	1,2,3
Oceans, Coasts and Climate Change - GEOS2115	The Unit of Study systematically outlines how these factors have played out to produce, by gradual change, the coasts we see today, as well as the less familiar deposits hidden beneath the sea and coastal lands. The Unit thereby outlines how knowledge of responses to climate change in the past allow us to predict environmental responses to accelerated climate change occurring now and in the future due to the industrial greenhouse effect, but places these responses into perspective against the geological record.	2	1
Music, Environment and Climate Change - MUSC3641	Climate change is one of the most important global issues of our era, and one which is destined to have a major influence on the lives of subsequent generations. It is especially dependent upon our understandings of the environment, our place within it, and our views of our environmental responsibilities. In this unit, students will explore some of the incredible range of ways in which music, the environment and climate change and interwoven.	2	1
The Anthropocene - ANTH3604	Anthropogenic climate change is the primary challenge facing the next generation of leaders. Anthropology's holistic approach to the social world provides key insights into the ways human/environment interactions have caused - and can mitigate - climate change. This unit will explore social/political/cultural aspects of climate change, focusing on current indicators and outcomes, and seek to understand and evaluate different forms of mitigation. The unit will rely on Anthropology's close association with social justice issues, and will focus on climate change effects in the developing world.	4	1,2,3
Climate Fictions - ENGL2676	This unit investigates how climate change features in fictional texts and shapes how we read them. How does literature interact with scientific, cultural and political discourses around climate? Does awareness of the climate crisis impact how we read and respond to texts from the past? Engaging with a diverse archive of contemporary and historical texts, students will think critically and creatively about the aesthetics and politics of climate fiction.	1	NA
Animal Ecological Physiology (Advanced) - BIOL3945	The content will be based on the standard unit BIOL3045 but qualified students will participate in alternative components at a more advanced level. Animal Ecological Physiology is a conceptually based unit of study that covers physiological interactions between organisms and their environments. The unit explores evolutionary processes that allow animals to persist in variable environments. These concepts are essential to understanding biodiversity and ecological function of animal populations, and how these are likely to change under future climate change.	2	1,2
Techniques for Sustainability Analysis - PHYS5032	This unit of study offers a practical introduction to quantitative analysis techniques including multiple regression, uncertainty analysis, integration, structural decomposition, and dynamic systems modelling, with a strong emphasis on demonstrating their usefulness for environmental problem-solving. This unit will show students how mathematics can be brought to life when utilised in powerful applications to deal with environmental and sustainability issues. Throughout the unit of study, example applications will be explained, including climate modelling, ecosystem trophic chain analysis, linking household consumption and environmental impact, identifying socio-demographic drivers of environmental change, and the uncovering the effect of land use patterns on threats to species.	2	1,2
Global Challenges: Food, Water, Climate - ENVI1003	In the 21st century the population of the world will increase both in size and its expectation in terms of food, energy and consumer demands. Against this demand we have a planet in crisis where natural resources are degraded, biodiversity is diminishing and planetary cycles related to climate are reaching points of irreversible change. Management of our precious natural resources is a balancing act between production and conservation as always, but now we have to do this against a background of potential large scale changes in climate. In this unit students will gain an understanding of the key environmental challenges of the 21st century; namely food security, climate change, water security, biodiversity protection, ecosystems services and soil security.	1	1
RESP5001 Integrated Environmental Practice	This unit will provide an opportunity for students to synthesize and draw conclusions from their coursework experience and learning, and to enable them to revise and/or develop the necessary skills for engaging with environmental research as part of their intellectual and/or professional growth. The unit focuses on skills in cross-disciplinary problem identification and the use of integrated analysis to address environmental challenges.	2	1
Australian Literary Ecologies - ENGL3703	This unit explores how literature has produced, reflected and challenged the idea of Australia. Examining a diverse range of historical and contemporary texts including work by First Nations and diasporic writers, students will engage critically and creatively with Australian literature as a complex ecology of ideas that influences how we interact with and understand concepts such as place, environment, nature, community, and nation.	1	NA
Earth, Environment and Society - GEOS1001	This is the gateway unit of study for Human Geography, Physical Geography, Environmental Studies and Geology. Its objective is to introduce the big questions relating to the origins and current state of the planet: climate change, environment, landscape formation, and the growth of the human population.	1	1

Nature and Crisis - PHIL3640	While the environmental crisis is a physical crisis--a crisis of extinction, biodiversity, pollution, and climate change--it is also a crisis of reason, challenging our usual ways of thinking about human and non-human life and demanding significant changes in the ways we think, act and behave. This unit aims to investigate the origins of the environmental crisis and develop alternative models of thinking and acting. We will also examine key philosophical and ecological concepts (e.g., nature, culture, society, responsibility, biodiversity, sustainability), explore the possibility of an ethics beyond the human, and consider new conceptions of agency, responsibility and multi-species justice.	1	1
Nature, Culture, Power - GCST3638	Understanding our place in a changing environment is a 21st century priority. This unit uses feminist, decolonising, and multispecies, frameworks to explore our contemporary environmental crisis. Drawing on examples such as climate change, toxic contamination, resource extraction, and biodiversity loss, this unit examines the material and conceptual links between human and non-human natures, and cultural, political, economic and social forces.	1	NA
Plant Ecosystem Management - BIOL3004	Australian native vegetation is a unique resource for diversity, ecosystem services and public use. The objective of this unit is to provide a broad understanding of three major plant terrestrial ecosystems that are found across Australia: forests, heathlands and grasslands and how they are managed. While the focus will be on native plant systems in an Australian setting, their importance at a global level will also be discussed. Each of the ecosystems described has the potential to be affected (positively or negatively) by a range of natural and anthropogenic disturbances. They include fire, climate change (drought and temperature),	1	1,2,3
Environmental Economics	The natural environment is invariably affected by production and consumption in our modern economy. In particular, environmental outcomes are important in the presence of market failures (externalities and public goods). This unit focuses on developing a student's detailed understanding of the economic techniques used by policymakers to address environmental issues.	2	NA
Science, Ethics and Society - HPSC2011	What is the role of science in society? What should it be? Scientific knowledge is often difficult to understand without years of training, and yet this knowledge is crucial to social welfare, and to our political and environmental futures. In this Unit of Study, we look at the practical realities of living in a society of which science is an integral part. Our examples come from across the sciences, with an emphasis on the health sciences, and on biodiversity, climate change, and environmental challenges.	2	1
Environmental Engineering - CIVL2010	This unit introduces students to the role of civil engineers and the historical development of the profession, and relates this to the Code of Ethics - Engineers Australia; impact of engineering on the human and natural environment; energy consumption, resourcing and renewal, dealing with variability in climate; definitions and practice of sustainability; environmental assessment tools and life-cycle analyses.	1	1,2
ENVI5801 Social Science of Environment	This unit provides both a conceptual and an empirical foundation for the analysis of relationships between society, the environment and natural resources. In our recent past the rapid rate of global environmental change has necessitated a breakdown of traditional disciplinary boundaries in research and social scientists are increasingly called upon to work alongside natural scientists in unraveling the complexities of the human-environmental nexus. Students will examine a number of environmental issues and consider a variety of social science academic perspectives about environmental management.	3	1,2,3
Ecological Econ and Sustainable Analysis - PHYS5031	This unit of study introduces contemporary topics from Ecological Economics and Sustainability Analysis, such as metrics for measuring sustainability; planetary boundaries and other natural limits; comparisons between ecological and environmental economics; valuing the environment; intergenerational discounting; global inequality with a focus on the climate change debate; and links between theories of well-being, human behaviour, consumerism and environmental impact.	2	1
Energy-efficient Building Systems - CIVL5533	Students will gain insight into energy consumption of building systems and how this is expected to vary considering different building solutions from an engineering design viewpoint in the context of climate change.	1	NA
ENVI5707 Energy- Source, Uses and Alternatives	This unit of study addresses physical principles and environmental impacts of energy generation and use. Different energy carriers, global energy resources, the economics associated with energy conversion, the politics and culture surrounding energy conversion and use, and renewable energy technologies are discussed. A key focus of the unit is on building numeracy skills for performing useful calculations related to energy and greenhouse gas emissions.	2	NA
Environmental Engineering - CIVL9010	This unit introduces students to the role of civil engineers and the historical development of the profession, and relates this to the Code of Ethics - Engineers Australia; impact of engineering on the human and natural environment; energy consumption, resourcing and renewal, dealing with variability in climate; definitions and practice of sustainability; environmental assessment tools and life-cycle analyses.	1	1
Forces of Change in Int Relations - GOVT6137	This unit introduces students to some of the most important contemporary structural changes in the global political economy and power structure with special attention to non-state actors (including corporate ones) and global civil society. The new agenda of international politics will be explored in a theoretical perspective - including the climate change emergency and the issue of effective global governance; the struggle for global social and economic justice, and the global prospects of democracy. The unit is designed as an advanced introduction to international relations for students pursuing postgraduate studies.	1	1
Responsible Business Mindset - BUS5220	The grand challenges of sustainability, climate change, social inequality, health and wellbeing, and corporate misconduct have revealed a critical need to transform business beyond the singular mindset of shareholder primacy. Coupled with this, a business must be proactive in establishing and maintaining its social license to operate as increasing risk and uncertainty has exposed a loss of trust in business. In response, this unit centres on co-creating a responsible business mindset with students based on an understanding that a business is deeply connected with the society and environment in which it operates.	1	NA

	Soil and Water in the Changing Environment - SOIL4000	In this unit you will investigate how soil, water, and the environment have changed and how it will change into the future in the face of climate change and other anthropogenic forcings. This evaluation will progress to the identification of signals of change in soil and water and a discussion of approaches that ensure that agriculture and our future can be sustainably developed. You will also discuss current research and technology focussed on mitigating this change. By doing this unit, you will develop an understanding of the impact of anthropogenic activities on soil and water and contribute to ideas on how we can create more sustainable and climate-resilient landscapes.	4	1,2,3
	Urban Ecology, Design and Planning - ARCH9080	This unit will introduce the conceptual bases for sustainable development and explore how principles of sustainability can be introduced into land use planning and urban design, including environmental management and multi-criteria evaluation methodologies in three modules. The unit will examine the evolution of urban areas in relation to their biophysical setting. This will lead to an understanding and appreciation of the urban ecology of a city in terms of the flows of materials, resources and energy, and the challenges presented by climate change and peak oil.	3	1,2,3
Oxford	MSc in Biodiversity, Conservation and Management	The course content is rooted in our established strengths in conservation biogeography, governance and planning, in global change and in research design. The course design also responds to the rise of market-based conservation including engagements with enterprise and the transformative potential of new technologies.	2	1
	DPhil in Earth Sciences	The Earth sciences are the focus of scientific understanding about this and other planets, embracing a large range of fundamental topics including the evolution of life, how climate has changed in the past and will change in the future, the nature of planetary surfaces and interiors and the processes underlying natural hazards like earthquakes and volcanoes.	2	1
	EcoWild (NERC CDT)	The EcoWild programme will deliver the next generation of innovative researchers and conservationists needed to protect the Earth's vulnerable wetlands.	3	1,2
	MPhil in Environmental Change and Management	The course has the following overarching aims: examine the nature, causes and impacts of major types of environmental change, examine the economic, legal, cultural, and ethical underpinnings of environmental responsibility and systemic solutions, including mitigation, adaptation, remediation, enhanced resource stewardship and other sustainable responses to environmental change at different scales and within different organisational contexts; and examine the economic, legal, cultural, and ethical underpinnings of environmental responsibility and systemic solutions, including mitigation, adaptation, remediation, enhanced resource stewardship and other sustainable responses to environmental change at different scales and within different organisational contexts	5	1,2,3,4,5
	MSc in Environmental Change and Management	The MSc aims to give you a broad appreciation of the major processes of environmental change and of the people and institutions involved in environmental management. The course seeks to produce environmental leaders who are interdisciplinary and analytical in their approach to environmental issues, and competent and aware decision makers.	5	1,2,3
	Intelligent Earth (UKRI CDT in AI for the Environment)	The programme will train a new generation of quantitative environmental data scientists to make substantial contributions in environmental and data sciences through five closely connected themes: Climate, Biodiversity, Natural Hazards, Environmental Solutions and AI/ML research on complex environmental data	5	1,2
	MSc in Nature, Society and Environmental Governance	The MSc in Nature, Society and Environmental Governance (MSc NSEG or NSEG) is grounded in the conviction that responding to contemporary global challenges demands intellectual rigour, innovation and flexibility.	1	1
	MSc in Sustainable Urban Development	Topics include: Introducing sustainable urban development and, climate change and the built environment	1	1
	MSc in Water Science, Policy and Management	The MSc in Water Science, Policy and Management aims to equip the next generation of water professionals with the blend of skills necessary to make a significant contribution to sustainable water management pathways across competing priorities of water for ecosystems, food, energy, economic growth and human consumption.	2	1,2,3,4
Cambridge University	Architecture	Topics include sustainable Housing and Climate Change	1	Topic specific
	Chemical Engineering and Biotech	The Chemical Engineering and Biotechnology course at Cambridge looks at the challenge of how processes can make products in a sustainable way as climate change occurs.	1	NA
	Geography	Study of some of the biggest challenges facing our planet, from climate emergencies to pandemics and urbanisation.	1	1,2
	Land Economy	Land Economy combines law and economics with aspects of the environment, business, finance and resource management.	1	1

	PGCert CISL Sustainability Leadership for the Built Environment	These courses explore the importance of building knowledge and leadership skills to drive real change through multiple professions and disciplines working together. The built environment is facing challenging global carbon reduction targets, affecting every area of the design and construction process, across public and private works. As a result, there is a phenomenal appetite for sustainability and environmental skills across every built environment role.	4	1
	MSt Sustainability Leadership for the Built Environment	These courses explore the importance of building knowledge and leadership skills to drive real change through multiple professions and disciplines working together. The built environment is facing challenging global carbon reduction targets, affecting every area of the design and construction process, across public and private works. As a result, there is a phenomenal appetite for sustainability and environmental skills across every built environment role.	4	1
	MSt Climate, Environmental and Urban Policy	Themes are: Understanding sustainability transformations, Economics and Public Policy of Sustainability and Law and Governance Sustainability	4	1
	MPhil in Holocene Climates	This MPhil offers an 11-month programme of advanced study and research into the natural and anthropogenic causes and ecological and societal consequences of Holocene climate variability.	2	1
	MPhil in Quantitative Climate and Environmental Science	The course structure has been designed to provide students with the theoretical knowledge, practical experience, and transferable skills required to undertake world-leading quantitative scientific research in Climate and Environmental Sciences. The course will train a new generation of scientists to work with environmental data to address the myriad of challenges associated with climate change.	3	1,2
Imperial College	MSc Climate Change, Management & Finance	MSc Climate Change, Management & Finance is a one-year programme that gives graduates the interdisciplinary skills required in business on issues relating to climate change and sustainability. You will learn from leading practitioners and world-class faculty how to put the latest academic thinking and business and climate change strategies into practice.	3	1,2,3
	Grantham Institute - Climate Change and the Environment	We initiate, develop and support multidisciplinary climate and environmental research at Imperial College London, attracting world class talent. Through our work, we seek to understand our planetary environment, how the human-environment interacts with the natural world, and how the translation of research to inform policy and innovation can help create a sustainable, resilient, healthy future for the planet.	4	1
	MSc Environmental Data Science and Machine Learning	Designed to prepare you for a career in environmental science or engineering, you'll learn how to apply your knowledge to a broad range of environmentally motivated applications.	2	1
National University of Singapore	Bachelor of Environmental Studies (Honours)	The programme adopts an interdisciplinary and broad-based approach to effectively address national, regional and global environmental challenges. These include over-exploitation, pollution, climate change, land and water use, habitat degradation, and the building of liveable high-density cities. It seeks to develop environmental leaders and advocates who are scientifically informed and capable of formulating solutions for a sustainable future.	2	1
	MSc in Biodiversity Conservation and Sustainability	The Southeast Asia region is experiencing unprecedented economic growth that is closely linked to the exploitation of natural biodiversity resources. However, responsible management of natural resources is crucial to sustainable long-term development, given the severity of climate change and the increasingly difficult challenge of discovering climate change solutions.	4	NA
	Topics on Nature-based Climate Solutions	Nature-based climate solutions are an important part of global strategies to address climate change. This module covers current issues related to the impacts of climate change, the potential and limitations of nature-based climate solutions, and the co-benefits they deliver	4	1,2,3
	Conservation Governance and Climate Solutions	The module will also focus on innovative solutions being applied to solve environmental issues and promote sustainability through an overview of corporate social responsibility, innovative approaches to sustainable financing and incentive- based approaches to conservation.	3	1,2,3
	Climate Hazards, Risks and Uncertainty	Hazards and the risks posed to society are rapidly changing in response to climate change. The multiple dimensions of uncertainty are explored along with understanding the effective communication of risk and uncertainty, and how decisions can be made under deep uncertainty.	3	1
	Coastal Vulnerability, Risk and Adaptation	The course will also explore the robustness of adaption approaches and implementation in coastal settings and will contrast developed and developing country approaches.	5	1,2,3
	Political Economy of Climate Change & Sustainable Development	The course will bring insights about concepts such as climate justice and nature-based solutions that have basic and applied policy relevance for Asian contexts.	3	1

	Graduate Diploma in Climate Change and Sustainability	This course will explore different models of sustainability and their critiques, with particular focus on the challenges of developing sustainable initiatives in the context of climate change.	1	1
	Introduction to Climate Modelling	The objective of this course is for the students develop a basic understanding of climate models work and how they 'add value' in climate research.	2	1
	Master of Science in Climate Change and Sustainability - Dynamic Environments	This course introduces techniques through which dynamic environmental conditions can be measured and monitored and provides a basis for reasoned debates about issues related to environmental change.	2	1,2,5
	How to Live Well on a Damaged Planet	This course explores how life is being reshaped, reimagined and re-practiced in the Anthropocene, an era of cascading social and environmental crises. Rather than positing the 'problem', we will learn the arts of listening; rather than formulating 'solutions', we will attend to speculative and place-based responses.	4	1
Tsinghua University, China	Climate Change Economics	This course describes the relationship between climate change and economic society, and shows how to use economic methods to solve some important climate problems. Learning this course will help you initially master the theories and methods of climate change economics and understand the frontier topics in the sustainable development of social economy.	1	1
	China's Perspective on Climate Change	Understand China's position, actions and future plans on climate change and its impacts	1	1
	Climate Change Science and Negotiations	Humanity is up against a tight timeline to address climate change. Learn how we can deeply decarbonize the global energy systems, and put the world on a 2°C pathway.	1	NA
Harvard	The Health Effects of Climate Change *	By looking at air quality, nutrition, infectious diseases, and human migration, this course will show you how increases in greenhouse gases impact public health. Experts working in a variety of settings will present their recommendations for responding to these challenges, and interested students will have the opportunity to learn about the research methods that measure the health effects of climate change.	1	1
	Sustainable Business Strategy	Climate change. Income inequality. Social injustice. These are just three of the big problems of our time. In Sustainable Business Strategy, you will learn how businesses can thrive and grow while simultaneously playing a major role in solving some of these big problems. You will also learn how you as an individual can make a difference.	1	NA
	Climate Change Policy: Economics and Politics Online	This interactive online program is designed for managers, analysts, and leaders from government, corporations, and non-governmental organizations from around the world. Topics will include why some governments might choose to address climate change more or less vigorously.	1	1
	Climate Change and Energy: Policymaking for the Long Term	Climate Change and Energy: Policymaking for the Long Term is a week-long executive program led by distinguished Harvard professor and leading climate expert, Robert Stavins.	1	1
	Sustainability Microcertificates	Climate change is one of the most urgent issues facing our society and will have an impact across a wide range of sectors. With more employers focusing on climate action, expertise in specialized sustainability topics can set you apart in today's competitive job market.	1	1
	Business and Climate Change	Understand the science, economic impact, and policy implications of climate change. Explore climate change mitigation and adaptation efforts' scalability, costs, and benefits to inform decisions related to your industry and role	4	1,2,3
	Climate Action: Persuasion, Advocacy and Negotiation	In this course, students will learn three core skills to build power and advance environmental goals:	2	1
	Managing Climate Change Risks: Information, Incentives, and Institutions	This course explores how information, incentives, and institutions influence the actions taken by decision-makers on (1) adaptation and resilience; (2) emission reductions; (3) carbon dioxide removal from the atmosphere; and (4) solar geoengineering. Students will gain exposure to models drawing from decision science, economics, integrated assessment, political science, and statistics to evaluate risk management strategies.	2	1,2
	Financing the Clean Energy Transition	Avoiding the most catastrophic impacts of climate change requires nearly a complete replacement of the world's energy system. Students will engage with financial models and project financing on a granular level, and also top-down, covering some of the different policy instruments that might accelerate clean energy financing such as carbon pricing, multilateral development bank reform, and national development plans.	1	NA

Confronting Climate Change: A Foundation in Science, Technology and Policy	The course is intended as a foundational course on climate change for students from around the university, preparing them for more specialized courses in their individual concentrations or degree programs.	1	1
Energy & Environment	Harvard has a responsibility to create opportunities for its undergraduate students to broaden and deepen their understanding of the complexities associated with energy and environmental issues, and provide them with the tools needed to address our challenges now and into the future.	1	1
Environmental Policy and International Development Graduate Certificate	Analyze the science of climate change, social adaptation of human communities, and diplomacy efforts born out of the Framework Convention on Climate Change.	5	1
Natural Resource Management and Sustainable Ecosystems Graduate Certificate	Gain a deeper understanding of the impact that population growth and climate change is placing on food supply, resources, and land.	2	1
Sustainable Cities and Communities Graduate Certificate	Build the knowledge and skills necessary to help cities and communities design, develop, and maintain more sustainable systems.	1	1,2,3
Corporate Sustainability and Innovation Graduate Certificate	Gain the skills you need to help your organization adopt sustainable practices.	1	NA
Climate Change and Energy: Policymaking for the Long Term	The Harvard Kennedy School Executive Education program <i>Climate Change and Energy: Policymaking for the Long Term</i> is designed for policymakers and corporate leaders who want to be part of the solution to the threat of climate change.	2	1

Wageningen, The Netherlands

BSc Environmental Sciences	The degree is: able to investigate environmental issues like pollution, climate change and depletion of natural resources, unites natural-, social- and technological sciences to understand human-environment interactions, and aims to develop skills and knowledge to design sustainable solutions for the future of our planet.	1	1,2,3
BSc Soil, Water, Atmosphere	This degree is about hydrology, meteorology, chemistry, geography and soil science and focus on issues such as climate change, flooding, drought and erosion from a natural science perspective.	1	1,2
MSc Climate Studies	The programme focuses on an improved understanding of climate change across the earth and its impact on ecosystems and society. It covers geophysical and biogeochemical processes involved in climate change, and also the socio-economic aspects of causes and effects, as well as adaptation and mitigation as the main categories of societal response. It combines and integrates the knowledge and expertise from three domains: Earth Sciences, Life Sciences, and Social Sciences.	5	1,2
MSc Earth and Environment	The programme is about the physical, chemical and/or ecological processes in soils, water and the atmosphere from an Earth Sciences perspective at different time and spatial scales. Challenges like climate change, food security and the provision of water require in depth knowledge of these processes. You will gain an in-depth understanding of natural processes that is needed for innovative solutions that deal with issues like climate change, water resources, loss of biodiversity and soil degradation.	2	1,2,3
MSc Environmental Sciences	Students will gain insight into the socio-economic causes and the characteristics of pollution and degradation of the natural environment, including the effects on human beings, the atmosphere, ecosystems and other organisms. This programme is based on an interdisciplinary approach. Students learn to develop analytical tools and models, as well as technologies, socio-political arrangements and economic instruments to prevent and control environmental and sustainability issues.	2	1,2
MSc Communication, Health and Life Sciences	You will study complex social challenges around health or life sciences from various perspectives. These life sciences can be for example climate, nature, environment, water, sustainability, biotechnology and food production. You will learn what the role of communication is in addressing these social challenges.	1	1

UC (Berkeley) very difficult to find actual subjects and courses

Pacific TAFE	Foundation Climate Change	This course will provide an introductory background to climate change in the Pacific Islands. Students will be motivated to think critically to mitigate and adapt to climate change challenges in the Pacific Islands.	2	1
	Diploma of Resilience Programme (L5) - Vulnerability and Risk Assessment	This course describes the skills and knowledge required to manage and conduct a comprehensive risk assessment. This includes understanding the methods of assessing and managing risk, and the suitability of measures for managing risk for Pacific Island communities. It also includes assessing the vulnerability of a community to climate and disaster related hazards	5	2
	Advanced Diploma of Resilience Programme (L6) - Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) Nexus	Students will be able to explain the challenges of integrating CCA and DRR including governance and framework fragmentation and differences of aims and communication between CCA and DRR practitioners in the context of Pacific Island Countries or Territories.	5	1
	National Adaptation Plan Process	Students will be able to explain the guiding principles, objectives and opportunities offered by a NAP process; the structure and the key features of a NAP; similarities and differences between sustainability and resilience; and methods of integrating sustainability in resilience projects.	5	1
University of the South Pacific	Mainstream Climate Change Adaptation (CAA) and Disaster Risk Reduction (DRR) in Development Process	This course introduces the key elements and principles of mainstreaming climate change adaptation (CCA) and disaster risk reduction (DRR) into development planning for a Pacific Island Country or Territory. The course provides details of analysing the integration of CCA and DRR into national and sub-national development planning such as policy and priorities, organisational structures and responsibilities, long term and short-term objectives.	5	3,4,5
	Physical Geography: Global Biophysical Environments	This course provides an introduction to the study of the Earth's biophysical environment. It includes dealing with the global atmospheric system and the natural and human-induced changes to which this has been subjected.	1	1
	Environmental Change in the Pacific GE409	Talk of the human-enhanced greenhouse effect and the ways in which it may affect our lives has made many people more aware of environmental change.	1	1
	Introduction to Marine Resources Management	This course is on the global perspective of ocean resources management and introduces many basic concepts of environmental protection, sustainable resource utilisation and international law.	1	1
	Environmental Change & Green Development (post-grad)	This course is multidisciplinary in nature. It is designed to provide students with knowledge about contemporary debates on environment-development and climate change. Responses to environmental challenges with a mix of more sustainable development initiatives such as renewable energy resources and green technologies will be discussed.	1	1
	Gender and Environment (post-grad)	This course will provide a forum for the critical examination and understanding of the way the category of gender plays out in environmental issues, with a focus on the Pacific Island Countries. It will explore how the environment shapes gender roles, norms and relations, and how these in turn affect the use, management and conservation of its resources, as well as social responses to climate change.	1	1
	Regional Environmental Law	The objectives of this course are to provide students with an understanding of the main environmental issues in South Pacific nations, the environmental law regimes in South Pacific nations, and the interaction between national and international environmental laws.	1	1
	International Environmental Law	The general aims of this course are to raise awareness of students with respect to global and Regional environmental law issues and to enhance critical thinking with respect to environmental law making, its implementation and enforcement on a global and Regional level.	1	1
	Climate Finance & Adaption Project Design (post-grad)	The climate finance course provides an overview of climate change finance, beginning with international finance flows and financiers, and continuing with challenges and opportunities for countries seeking to access financing for climate change activities, including adaptation, mitigation and climate/disaster resilience projects. The course supports students develop skills in designing related to the design of bankable climate change projects.	2	1,3
	Climate Change: Impacts, Vulnerability & Adaptation (post-grad)	This course examines the range of impacts and the degree of vulnerability posed by climate change to Pacific Island Countries, and critically reviews the adaptation strategies to address vulnerabilities, at both national and community levels. The course is intended for persons in the Pacific Islands involved in medium to longterm planning for natural resources, economic, and social development, and/or the natural environment, especially graduates working in government or NGOs who are not familiar with the climate related issues in the Pacific.	5	1,2,3
Climate Science (post-grad)	This course provides important insights into the rapidly developing and fast moving realm of climate science among future climate leaders of the Pacific, to understand the scientific basis of the threats of climate change impacts and to develop appropriate measures to address and manage the challenges of these adverse impacts.	3	1,2,3	

	Research Projects in Climate Change (post-grad)	This course is suitable for students who want to do a short research project in climate science, climate finance, tropical meteorology, physical oceanography, disaster risk management, food security, climate finance, environmental impact assessment, climate change impacts, vulnerability and adaptation and ecosystem-based adaptation at the postgraduate level.	2	NA
	Food Security & Climate Change (post-grad)	The continuing exposure and experience of climate change both locally and globally has made food security a global concern especially to vulnerable small island states of the Pacific Island community. This course examines the food system and status of food security at pre, during and post extreme climatic change events and challenges and factors affecting food security.	2	1
	Ecosystem-Based Adaptation for Climate & Disaster Resilience (post-grad)	This course provides the skills to evaluate inter-linkages between climate change and ecological resilience, and is centred on ecosystem-based adaptation, with an emphasis on the protection, sustainable management and conservation of Pacific ecosystems.	3	2,3
	Tropical Meteorology (post-grad)	The course provides an in-depth study of tropical atmospheric dynamics and processes	1	1
	Disaster Risk Reduction for Resilience (post-grad)	This course is designed to familiarise the learners with a theoretical and practical understanding of Disaster Risk Reduction (DRR) to support resilience building in the Pacific. It provides comprehensive knowledge on hazards, risk and vulnerability and practical uses of tools to assess risk.	3	1,2
ANU Australian National University	Master of Climate Change - Communicating for Environment and Climate Policy	This course explores what constitutes effective communication for environment and climate policy	2	CE
	International Climate Change Policy and Economics	This course introduces students to foundations of and recent developments in international climate change policy.	1	1
	Domestic Climate Change Policy and Economics	This course is about analytical frameworks, choice and design of policy for climate change at the national and sub-national level.	2	1
	Climate Change: Science, Society, and Policy	Climate change is arguably the greatest existential risk that humanity has ever faced. This course explores the increasing impetus from scientific research and academia, the potential and need for sustainable global development, and why, despite this, international and domestic climate action is often limited.	1	1
	Climate Change Vulnerability and Adaptation	This course examines the climate change problem in terms of vulnerability and adaptation from primarily scientific, societal and policy perspectives.	4	2
	Human Health, Environment and Climate Change	This course examines the fundamental concepts in environmental health, health needs assessment, and environmental risk assessment and management. This will include a range of environmental risks, including water and food quality, sanitation, air quality, occupational health, environmental toxicology and the built environment. This course will also examine the pathways through which climate change is likely to influence human health.	5	1,2,3
	Research in Climate Change and Adaptation	The course allows you to explore in greater depth a research topic relevant to climate change adaptation.	5	NA
	Climate, the Environment and National Security	This course examines climate change and environmental security from a national security lens, examining the potential for conflict, confrontation and cooperation.	2	1
	Climate Law	This course provides an overview of the rapidly developing field of domestic and international climate law and justice. It examines the current state of the law and policy and emerging trends.	1	1
	Master of Energy Change	Climate change is one of the greatest challenges of the 21st century, and can only be solved with a worldwide transition to carbon-free forms of energy.	1	NA
	Sustainable Business Strategy: Net Zero and Beyond	The course takes the perspective of an individual corporation operating in a dynamic competitive environment in a capitalist economy, that seeks to: examine both its internal and external environments to determine the range of sustainability issues that it faces, including climate change; develop strategies for sustainable practices that enhance its competitive position; make a business case to a range of its stakeholders, including owners, for the adoption of those sustainable practices; and understand the principal barriers to the implementation of those practices.	1	NA

MIT- Massachusetts Institute of Technology	Sustainable Energy	In sustainable energy you will examining conventional and renewable energy generation technologies, studying how they are deployed throughout the world, and evaluating their roles in the future energy landscape. Technologies include solar power, wind power, storage, nuclear power, hydropower, and bioenergy. You will be presented with advanced tools and strategies to explore pathways to decarbonization in specific contexts, and to build consensus among stakeholders.	1	NA
	Energy Economics and Policy	Overall, you will gain insights into how applied economics and policy tools can effectively move the global energy sector toward renewable and clean energy sources to mitigate climate change, while at the same time promoting economic development.	1	NA
	Bachelor of Science in Climate System Science and Engineering	The curriculum prepares students for an expanding set of emerging careers in climate change science and engineering, climate risk modeling as well as climate and sustainability practices, with the necessary tools, methods, and scientific and engineering principles to develop an understanding of Earth's climate systems as well as modern approaches to mitigation and adaptation.	3	1,2,3
	Cities and Climate Change: Mitigation and Adaptation	Examines climate adaptation and mitigation responses at the city level. Discusses factors of greatest concern in adapting cities to climate change, including infrastructure; energy, food, and water systems; health; housing; and environmental justice.	4	1,2,3
	Engineering Sustainability: Analysis and Design	Introduces a systems approach to modeling, analysis, and design of sustainable systems. Students implement and analyze numerical models of systems, and make design decisions to balance physical, environmental, and economic considerations based on real and simulated data.	2	1
	21A.429 Environmental Conflict	Explores the complex interrelationships among humans and natural environments, focusing on non-western parts of the world in addition to Europe and the United States. Use of environmental conflict to draw attention to competing understandings and uses of "nature" as well as the local, national and transnational power relationships in which environmental interactions are embedded. In addition to utilizing a range of theoretical perspectives, subject draws upon a series of ethnographic case studies of environmental conflicts in various parts of the world.	1	1
	STS.43 Narrating the Anthropocene: Understanding a Multi-Species Universe	Examines human concern about the planet and how that fixation shapes concepts of time & space, knowledge-production, understandings of what it means to be human and non-human, as well as trends in scholarship, art, culture & politics. Indexes the way numerous actors and institutions came to understand, debate & narrate the Anthropocene, a geological epoch defined by human-induced climate change. Explores how it as a concept has opened up new ways of understanding relations within the planet, including care, accountability & multi-species mutualism.	1	1
	Decarbonizing Urban Mobility	Focuses on measuring and reducing emissions from passenger transportation. After examining travel, energy, and climate conditions, students review existing approaches to transport decarbonization. Evaluates new mobility technologies through their potential to contribute to (or delay) a zero emission mobility system.	1	NA
	Environmental Policy and Economics	Investigates the proper role of government in the regulation of the environment. Presents tools necessary to estimate the costs and benefits of a variety of environmental policies. Focuses on both conceptual thinking and quantitative evaluation of environmental issues. Gives particular attention to climate change: defines the major concepts underlying the climate problem; examines the measurement of climate damages as well as the costs of mitigating them; and discusses the various policy options available to communities, countries, and international coalitions.	2	1,2,3
	Indigenous Environmental Planning	Examines how Indigenous peoples' relationships to their homelands and local environments has been adversely affected by Western planning. Explores how these relationships have changed over time as American Indians, Alaska Natives, and other groups indigenous to North America and Hawai'i have adapted to new conditions, including exclusion from markets of exchange, overhunting/overfishing, dispossession, petrochemical development, conservation, mainstream environmentalism, and climate change. Seeks to understand current environmental challenges and their roots and discover potential solutions to address these challenges.	2	1
	D-Lab: Water, Climate Change and Health	Addresses mitigation and adaptation to climate change as it pertains to water and health. Focuses on regions where water-borne illness, malnutrition, and vector-borne diseases – problems that will worsen with increasing temperatures and urban overcrowding – represent the top three causes of morbidity and mortality.	5	1,2
	Civil and Environmental Engineering Department	The central focus of our research is to understand the processes that affect our air, water, land, and climate. Our research encompasses all components of environmental science and engineering: from a fundamental understanding, to assessment of impacts, to the development of improved processes and technologies to develop sustainable solutions for a healthier planet.	3	1,2,3
	Resilience of Living Systems to Environmental Change	Takes a multi-scale approach to understanding responses of living systems to perturbation. Mechanisms of stress sensing and response in plants, microbes, and animals from the level of individual cells to whole organisms. Emergent properties of organismal stress and population and community scale. Resilience of ecosystems and biogeochemical cycles to altered environmental conditions. Considers both natural and managed systems, focusing primarily on the terrestrial environment.	1	1,2
	Global Change Science	Introduces the basic relevant principles and concepts in atmospheric physics, climate dynamics, biogeochemistry, and water and energy balance at the land-atmosphere boundary, through an examination of two current problems in the global environment: carbon dioxide and global warming; and tropical deforestation and regional climate. An introduction to global environmental problems for students in basic sciences and engineering.	1	1

	Earth, Atmosphere & Planetary Sciences		This program prepares students for scientific and management careers in the environmental, natural resources, and technical consulting fields.	1	1
	Sustainable Energy		Covers resources, extraction, conversion, and end-use technologies, with emphasis on meeting 21st-century regional and global energy needs in a sustainable manner. Examines various energy technologies in each fuel cycle stage for fossil (oil, gas, synthetic), nuclear (fission and fusion) and renewable (solar, biomass, wind, hydro, and geothermal) energy types, along with storage, transmission, and conservation issues. Emphasizes analysis of energy propositions within an engineering, economic and social context.	1	NA
	Environmental Law, Policy, and Economics: Pollution Prevention and Control		Analyzes federal and state regulation of air and water pollution, hazardous waste, greenhouse gas emissions, and production/use of toxic chemicals. Analyzes pollution/climate change as economic problems and failure of markets. Explores the role of science and economics in legal decisions. Emphasizes use of legal mechanisms and alternative approaches (i.e., economic incentives, voluntary approaches) to control pollution and encourage chemical accident and pollution prevention. Focuses on major federal legislation, underlying administrative system, and common law in analyzing environmental policy, economic consequences, and role of the courts.	1	1
SHORT COURSES					
UNCC short courses (https://unccelearn.org/courses/)	tutorial		This tutorial introduces the concept of prioritizing adaptation options during adaptation planning and implementation. This tutorial will introduce the process of appraisal and prioritization and some tools that are used in the adaptation options appraisal process once adaptation options have been selected for consideration.	5	3
	tutorial		The effects of climate change are observed through the scarcity or abundance of water which in turn has serious impacts on other key socio-economic sectors such as health, agriculture, energy and infrastructure. For any climate change adaptation planning to be done, it will be important for these sectors to consider their linkages with water resources.	3	2
	tutorial		The course <i>Integrating Climate Risk Information into NAPs</i> shows how to strengthen National Adaptation Plans (NAPs) through appropriate climate information and coordinated policy action, enabling different types of institutions and actors to work together in a collaborative framework, drawing on the resources of the global hydro-meteorological community at large.	5	NA
	tutorial		The Climate Change International Legal Regime course presents the causes and effects of climate change, describes the mechanisms established by the United Nations Framework Convention on Climate Change (UNFCCC) and explains the key provisions and commitments under the Kyoto Protocol and the Paris Agreement.	1	1
	tutorial		This course addresses how human rights obligations require the international community to take more ambitious action to mitigate emissions, to support adaptation that benefits persons, groups and peoples in vulnerable situations, and to address loss and damage associated with the impacts of climate change.	3	1
	tutorial		This course Mastering National Adaptation Plans: from Start to Finish course will introduce learners to several important aspects of the NAP process.	5	NA
	tutorial		This self-paced e-course provides an overview of the interlinkages between gender, human rights, climate change, and renewable energy. It provides participants with the specific knowledge and tools to integrate and implement gender equality in renewable energy access and entrepreneurship, as well as related gender-responsive and human rights-based approaches in climate change mitigation and adaptation measures.	1	1
	tutorial		Ecosystem-based Adaptation (EbA), which encompasses the wise use of ecosystem services to help people adapt to climate change, delivers a wide range of benefits that boost overall development and human wellbeing and may contribute to national strategies to respond to the triple crises of biodiversity loss, climate change and the global post-pandemic scenario.	2	1,3
	tutorial		This course has been designed to build a solid understanding of the negotiating environment under adaptation for LoCAL Member Countries. It does so by first looking at the negotiation environment provided by the UN Framework Convention on Climate Change (UNFCCC), including its governing bodies, subsidiary bodies, negotiating groups and the financial mechanisms available, while identifying LoCAL's coordinates within this environment.	1	1
University of Cape Town	short course		This course looks at the effects, impacts, and drivers of climate change in cities, is able to distinguish the typologies, approaches, and tensions of climate change adaptation and develop a climate change plan based on participants' city contexts.	5	1,3
University of Colorado	short course		This course includes: Describe how place and context relate to climate risk and potential mitigation and adaptation choices	4	1,2,3
The University of Edinburgh	short course		This course includes: Find out how we can use the risk triangle to help address climate impacts, and learn the importance of mitigation and adaptation.	3	1,2

Appendix A12 – Professional Organisations

Organisation	Certificates/other recognition of learning	Course Title	Description
Engineering NZ		Engineering Climate Change	This course is aimed at any engineer who is interested in learning more about what they can do in their own role to combat the effects of the climate. It is relevant for all engineers, surveyors, planners, urban designers, landscape architects, contractors and project managers, in private or public practice. Primary focus appears to be on mitigation.
		Various articles on website	https://www.engineeringnz.org/news-insights/climate-unrest/
		Engineering Sustainability in practice	2 hours discussion Interested in hearing about how sustainability is being integrated into our industry? Join us and our panellists as they discuss what they're doing to advance sustainability in our sector, and what this means to them.
IEMA	Certificate in Environmental Management		IEMA's Certificate in Environmental Management course will give you the detailed knowledge of environment and sustainability that you're looking for. As well as improving your knowledge, this course takes it one step further and provides you with the ability to apply environmental management and assessment tools that are needed to be an effective practitioner. This course leads directly to IEMA Practitioner Membership.
Civil Service Institute Aotearoa		International Association for Public Participation	IAP2 is an international member association which seeks to promote and improve the practice of public participation or community and stakeholder engagement, incorporating individuals, governments, institutions and other entities that affect the public interest throughout the world.
GARP-Global Association of Risk Professionals	Sustainability and Climate Risk Certificate		The SCR Certificate is your entry into a fast-growing community driving the future of climate risk management. From entry-level to executive, across industries such as banking, fintech, hospitality, fashion, and more, SCR Certificate holders are leading their companies with solutions to today's top issues in climate change and sustainability.
Te Kāhui Whaihanaga NZ Institute of Architects			No substantive content on climate change.
American Society of Adaptation Professionals		A wide range of resources	A significant amount of information on adaptation including a competency framework for adaptation professionals.
NZAC NZ Association of Counsellors	Continuing Professional Development		Each year a member chooses 2 from a list of 11 Competencies as their focus for professional development. "Climate Change and Te Taiao the natural environment - What climate change means for the counselling profession: impacts, effects and responses" is one of the 11 core counsellor competencies.
CA ANZ Chartered Accountants A & NZ		Webinars	Example: Sustainability and how Finance Professionals can support the evolving landscape
NZ Climate Action Network			The New Zealand node of Climate Action Network - a global network of more than 1,500 civil society organisations in over 130 countries taking collective action for climate justice. Appears to be focused on mitigation. The latest posted item was 2022 so may not still be active.
New Zealand Law Society		Articles in Lawtalk	Established a Climate Change Law Committee. Climate change law is fast-developing, and we expect the number of legislative and policy initiatives to continue growing, domestically and internationally.
New Zealand Planning Institute	CPD programme in development		
Local Government New Zealand	Ākōna - recognition of learning	E-modules for elected members. Includes a new climate change module	Broad range of content covering both mitigation and adaptation. Includes links to other organisations website resources.
Āpōpō - Infrastructure Asset Management Professionals		E-module promoted as Climate Change 101.	An introduction to integrating climate change considerations into asset management. the following learning objectives: Have a basic understanding of the science of climate change and how it affects and impacts infrastructure and infrastructure services. Identify the areas in asset management that could assist in resilience improvements of infrastructure and management processes. Understand the input of asset management processes to improve or maintain the levels of service in light of the resilience cycle. Develop an asset management capability improvement strategy for incorporating climate change into asset management.
Institute of Civil Engineers Australia		Webinara and journals	Focus is on sustainability throughout the construction supply chain. Covers multiple engineering sub-disciplines, e.g. urban design and planning, water management, structures, transport
Engineers Australia		E-modules include climate smart engineering and sustainability awareness	Combination of mitigation and adaptation

NIWA		Has great resources including Adaptation toolbox, guidance in risk assessments
ACENZ - Association of Consulting and Engineering New Zealand		Uses members as resources for sharing expertise through targeted events
Water New Zealand	Podcast series and annual conference	Established a Special Interest Group for climate change. Covers both mitigation and adaptation. Adaptation example includes use of nature-based solutions
NZ Infrastructure Commission	Webinars and reports	Research important infrastructure issues, advise on policy, provide expert project support, and share data on both upcoming projects and infrastructure performance. Submit to various organisations on range of issues.
Science Learning Hub	Articles, activities, videos	A NZ science education learning hub for teachers and students (primary/high). Appears to be more focused on mitigation.
Te Apārangi - The Royal Society of NZ	Articles, blogs, expert advice papers	Provision of resources covering both mitigation and adaptation
BRANZ	Articles, bulletins	Provision of resources covering both mitigation and adaptation