



The *Building Regional Adaptation Capacity and Expertise (BRACE) Program* Presents:

Building Adaptation Skills for a Changing Climate Webinar Series

Building Adaptation Skills and Qualifications:

Key Considerations for Upskilling the Workforce of Tomorrow

October 11, 2022

Le programme Renforcer les capacités et l'expertise régionales en adaptation (RCERA) présente:

Série de webinaires sur le renforcement des compétences en adaptation aux changements climatiques

Développer les compétences et les qualifications en matière d'adaptation : Considérations clés pour la mise à niveau de la main-d'œuvre de demain

11 octobre, 2022



WEBINAR SERIES / SÉRIE DE WÉBINAIRES

Building Adaptation Skills...

- **for Engineers** - September 15, 1-2 pm
- **for Planners** - October 3, 1-2 pm
- **Key Considerations for Upskilling the Workforce of Tomorrow** - October 11, 1-2 pm
- **for Indigenous Communities** - Late October
- **for Water Management** - Early / Mid November
- **in Economic Sectors** - Late November
- **for Young Professionals** - December 7, 1-2 pm

Renforcer les capacités d'adaptation...

- **des ingénieurs** - 15 septembre, 1-2 pm
- **des urbanistes** - 3 octobre, 1-2 pm
- **Considérations clés pour la mise à niveau des compétences de la main-d'œuvre de demain** – 11 octobre 1-2 pm
- **des communautés autochtones** - fin octobre
- **pour la gestion de l'eau** – début / mi novembre
- **dans les secteurs économiques** - fin novembre
- **des jeunes professionnels** - 7 décembre, 1-2 pm



BRACE PROGRAM / PROGRAMME RCERA

Overview

- \$18M over 5 years (2017-2022)
- Building adaptation capacity increase adaptation action and climate resilience
- 20 thematic projects targeting a broad range of audiences

Targeted approach

- Worked with all Provinces to scope out priorities and co-develop projects

Types of deliverables

- Webinars and workshops
- Courses and online modules
- Web platforms, videos, case studies
- Guidelines for practitioners
- Networks and communities of practice
- Internships and resources for educators
- ...

Aperçu

- 18M\$ sur 5 ans (2017-2022)
- Renforcer les capacités en matière d'adaptation pour accroître les mesures d'adaptation et la résilience climatique
- 20 projets thématiques ciblant un large éventail de publics

Approche ciblée

- Collaboration avec toutes les provinces pour définir les priorités et élaborer conjointement les projets.

Types de produits:

- Webinaires et ateliers
- Cours et modules en ligne
- Plateformes web, vidéos, études de cas
- Lignes directrices pour les praticiens
- Réseaux et communautés de pratique
- Stages et ressources pour les éducateurs
- ...





PRESENTATIONS / PRÉSENTATIONS

1) Development and evaluation of a training program designed to foster the adoption of climate change adaptation good practices by engineering, urban planning and architecture professionals

PIERRE VALOIS, Ph.D.

Professor, Laval University; Director of Québec Observatory of Adaptation to Climate Change

2) Using micro-credentials to create agile pathways for climate action upskilling

Dr. ROBIN COX

Professor & Program Head, Royal Roads University; Director of ResilienceByDesign Lab

Dr. DAVID PORTER

Principal, DP+Associates - contractor to Resilience by Design Lab and Academy for Sustainable Innovation

1) Élaboration et évaluation d'un programme de formation favorisant l'adoption de bonnes pratiques en adaptation aux changements climatiques par les ingénieurs, urbanistes et architectes

PIERRE VALOIS, Ph.D.

Professeur titulaire, Université Laval; directeur de l'Observatoire québécois de l'adaptation aux changements climatiques

2) Utilisation de micro-certifications pour créer des parcours de perfectionnement en mesures climatiques

Dr. ROBIN COX

Professeure et directrice de programme, Université Royal Roads; directrice du laboratoire *ResilienceByDesign*

Dr. DAVID PORTER

Consultant principal, DP+Associates; contractuel au laboratoire *ResiliencebyDesign* et à l'*Academy for Sustainable Innovation*

Development and evaluation of a training program designed to foster the adoption of climate change adaptation good practices by engineering, urban planning and architecture professionals

October 11th, 2022



Presentation plan

1. Project objectives
2. The training program: five modules
3. Good practices and lessons learned
4. Next steps

Funding agencies & partners

- Funded by the Ministry of the Environment and the Fight against Climate Change and Natural Resources Canada/BRACE Program



Natural Resources
Canada

Ressources naturelles
Canada



- Professional orders (engineers, urban planners and architects)



ORDRE DES
ARCHITECTES
DU QUÉBEC

- Ministries

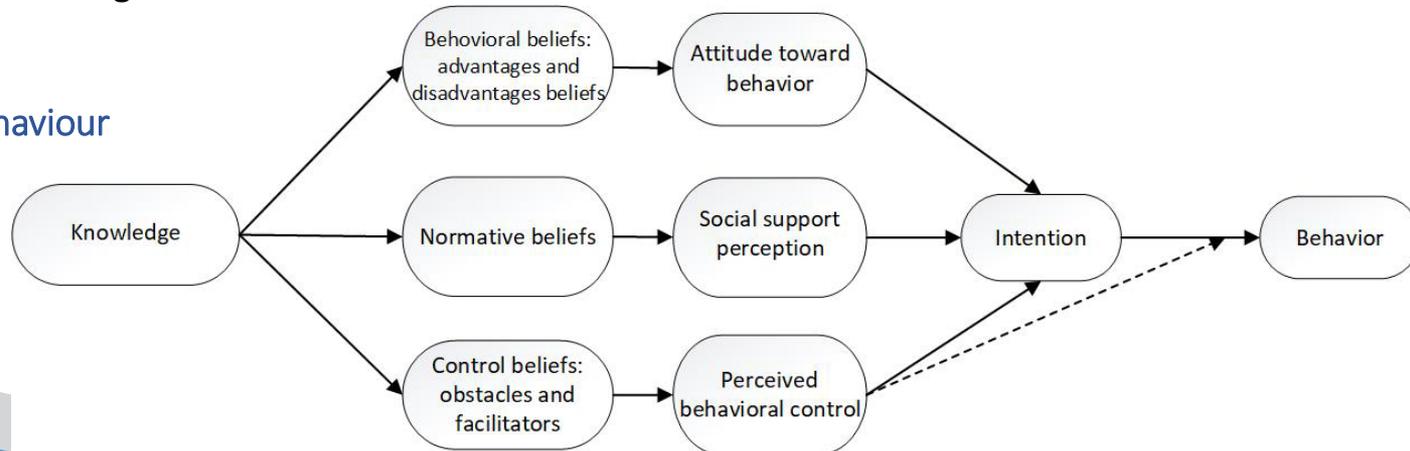
- Ministry of Public Security
- Ministry of Municipal Affairs and Housing
- Ministry of Transport
- Ministry of Health and Social Services

Project objectives

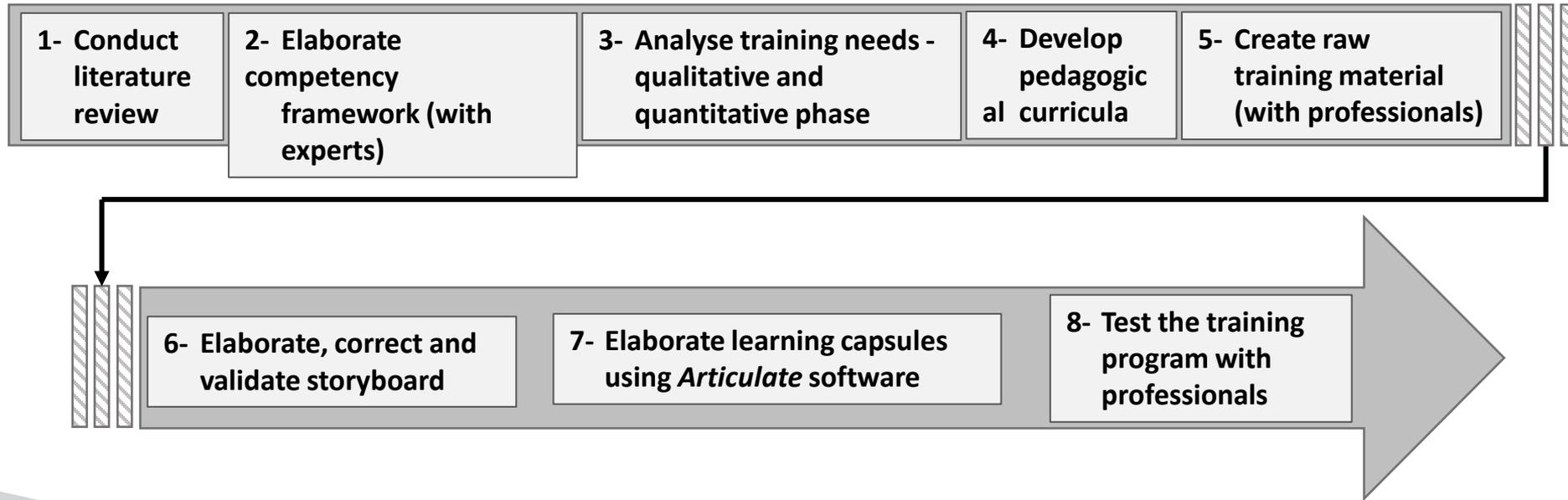
- Elaborate a training program addressed to Québec's engineers, urban planners and architects
 - Reinforce the professionals' competencies (mobilization of knowledge, skills and social components such as attitude and values) related to climate change adaptation
 - Change the negative beliefs toward adaptation and reinforce the positive ones
 - The ultimate goal of the project is to motivate the professionals to adopt more practices favoring adaptation to climate change

Theory of planned behaviour

Ajzen (2005)



Elaboration of the training modules: 8 steps



The training program: five modules

Module 1

Basic notions related to climate change

Three chapters:

- The links between the greenhouse gases and climate change
- The climate changes observed globally, in Canada and in Québec
- The global consequences of climate change and their impacts on professional practices

Module 2

Climate information to help planning the adaptation strategies

Four chapters:

- Climate data: how to use them to enhance climate adaptation planning
- Integrating climate data in decision-making
- The expected changes regarding climate variables of interest
- Major climate data and information platforms

The training program: five modules

Module 3

Concepts and challenges related to climate change adaptation

Two chapters:

- The conceptual framework for climate change adaptation
- Climate change adaptation-related challenges

Module 4

Climate change adaptation pathway: how to integrate it in the current practice

Five chapters:

- Professionals' role in the climate change adaptation pathway
- Recognizing the issue: the first step of the climate adaptation pathway
- Getting ready: the second step of the climate adaptation pathway
- Implementation: the third step of the climate adaptation pathway
- Adjusting: the fourth step of the climate adaptation pathway

The training program: five modules

Module 5

Climate change adaptation strategies

Two chapters:

- The institutional tools professionals can mobilize to integrate climate change adaptation action in their practice
- The advantages and disadvantages of climate change adaptation measures

Example of a specific pathway

Challenges and opportunities in the profession

What big challenges and opportunities regarding climate change should professionals expect to encounter in their practice?



Good practices

Good practices

- Having a signed agreement/contract with the three professional orders
- Regular consultations with:
 - The professional orders
 - Climate adaptation experts (researchers and professionals)
 - The ministries (Ministry of the Environment and the Fight against Climate Change and Ministry of Public Security)
- Evaluating and adjusting a pilot of each training module based on the feedback of a sample of approximately 20 professionals
- Having our training program hosted on an already functioning platform (i.e. *Maestro*, the Québec engineers training website)

Lessons learned

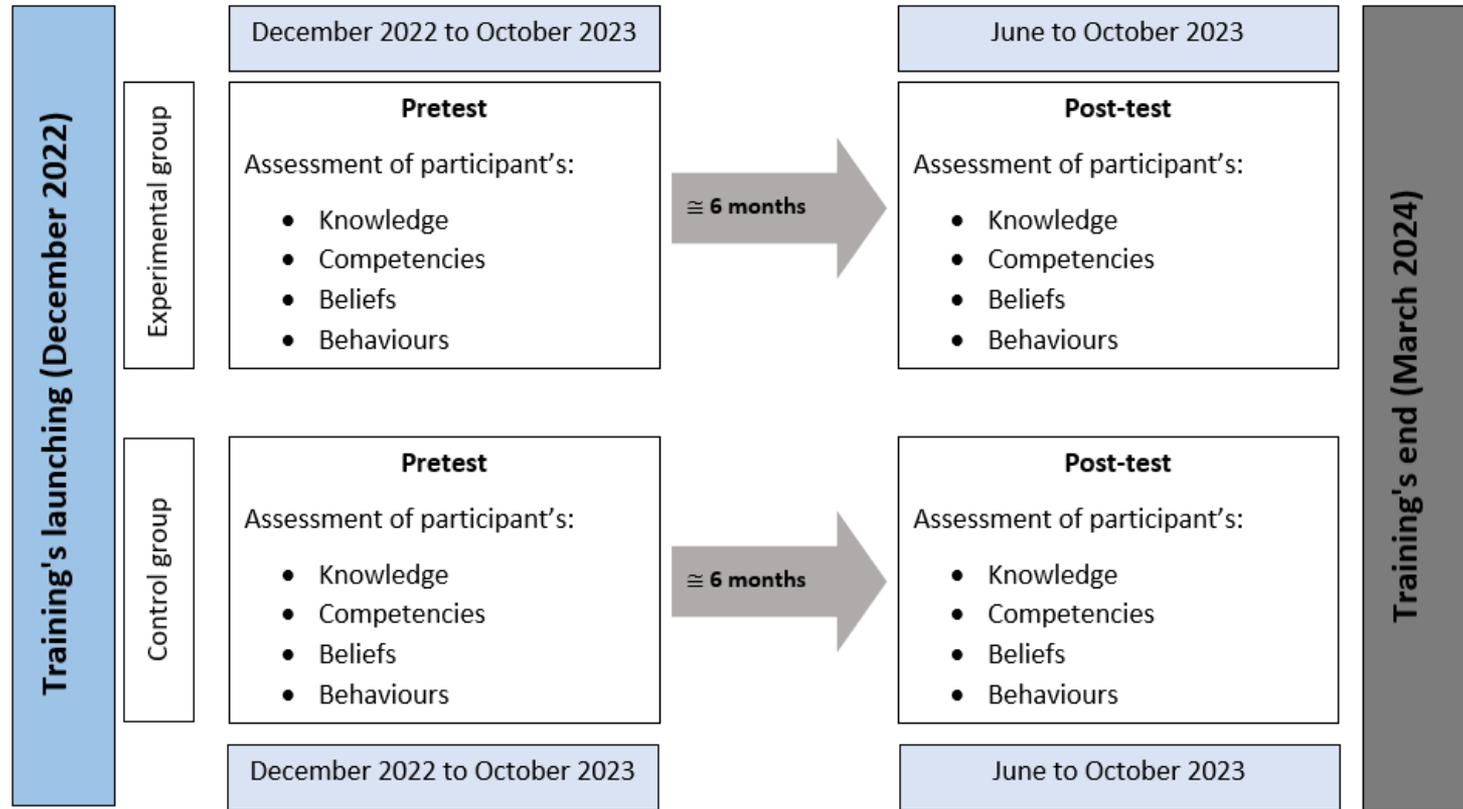
Lessons learned

- Work more closely with the technopedagogues of the contracted company to transform the scientific content into didactic content
- Developing professional competencies in a 15-hour training programme: more difficult than it seems
- The training will have to be updated regularly in response to evolving regulatory frameworks and scientific consensuses
- The importance of conducting a needs analysis with climate change experts as well as with non-expert professionals

Next steps

- **Second objective of the project:** Verify if the training program has achieved its goals
 - For that, we must assess the changes in professionals':
 - knowledge/skills/competencies
 - beliefs
 - behaviour
 - If there are changes, are they attributable to our training program?
 - How ? By conducting a pretest and a post-test with an experimental and a control group

Training follow-up





**Observatoire québécois
de l'adaptation aux
changements
climatiques**



**Université Laval,
2320 rue des Bibliothèques,
local 462, Québec**



**418-656-2131
poste 409330**



oqacc@ulaval.ca



Resilience By Design Lab: Adaptation Learning Network

Climate Action: Connecting Micro-Credentials, Competencies, and Workforce Upskilling

October 2022



Adaptation Learning Network

INSPIRING
CLIMATE ACTION

Capacity-building for advancing climate-change leadership has become a critical workforce development requirement for both professionals and front-line workers in 2022

**Funded by NRCan - BRACE and
BC Ministry of Environment & Climate Change Strategy**



Micro-credentials on Climate Action – The Problem

“Capacity-building for advancing climate change-related leadership has become a critical workforce development requirement for both individuals and employers in every sector across Canada. There is an urgent need for workforce upskilling to effectively address the growing impacts and risks of climate change, and to accelerate an economic transition towards a low-carbon, resilient society.”

(Porter & Forssman, 2022)



Reskilling needs



of all employees will need
reskilling by 2025.

Source: Future of Jobs Report 2020, World Economic Forum.

As the World Economic Forum Jobs 2020 report (2020) noted, there is an increasing need to provide short-timeframe opportunities for re-skilling and upskilling that will not diminish as we move forward.

Micro-credentials have been proposed as a strategy to enable the ongoing development of knowledge and skills across the workforce.

Use the HEQCO (2021) micro-credential definition to market the RRU-ALN micro-credential program

A micro-credential is a representation of learning, awarded for completion of a short program that is focused on a discrete set of **competencies** (i.e., skills, knowledge, attributes), and is sometimes related to other credentials.

Source: Pichette, J., Brumwell, S., Rizk, J., Han, S.(2021)
Making Sense of Microcredentials.
Toronto: Higher Education Quality Council of Ontario.

Key features of micro-credentials

Figure 1: Defining Features of a Microcredential



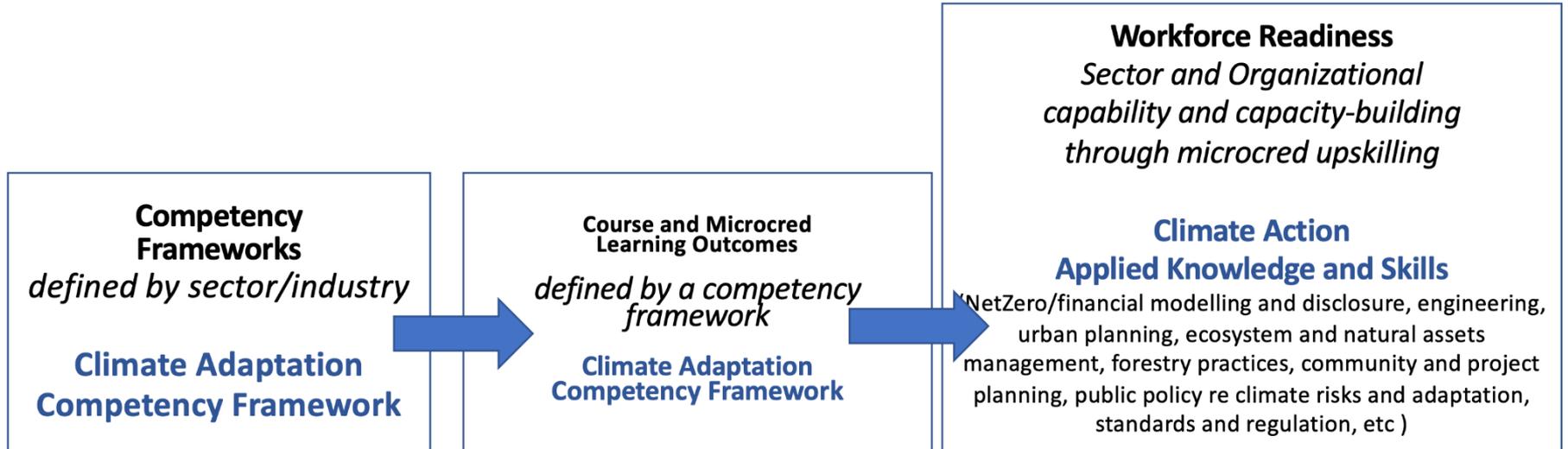
Narrow scope: Microcredentials focus on developing a discrete set of competencies. In contrast, traditional credentials focus on a comprehensive set of interrelated competencies.



Short completion time: A narrow scope of learning allows students to obtain microcredentials faster than most traditional credentials.

Source: Pichette, J., Brumwell, S., Rizk, J., Han, S. (2021)
Making Sense of Microcredentials.
Toronto: Higher Education Quality Council of Ontario.

Using Competency Frameworks to Design Micro-Credentials





CACF V1: Consulted globally to create the Climate Adaptation Competency Framework



Activating the CACF to inform RRU Climate Action programs

- 5 Domains



- 24 Competencies



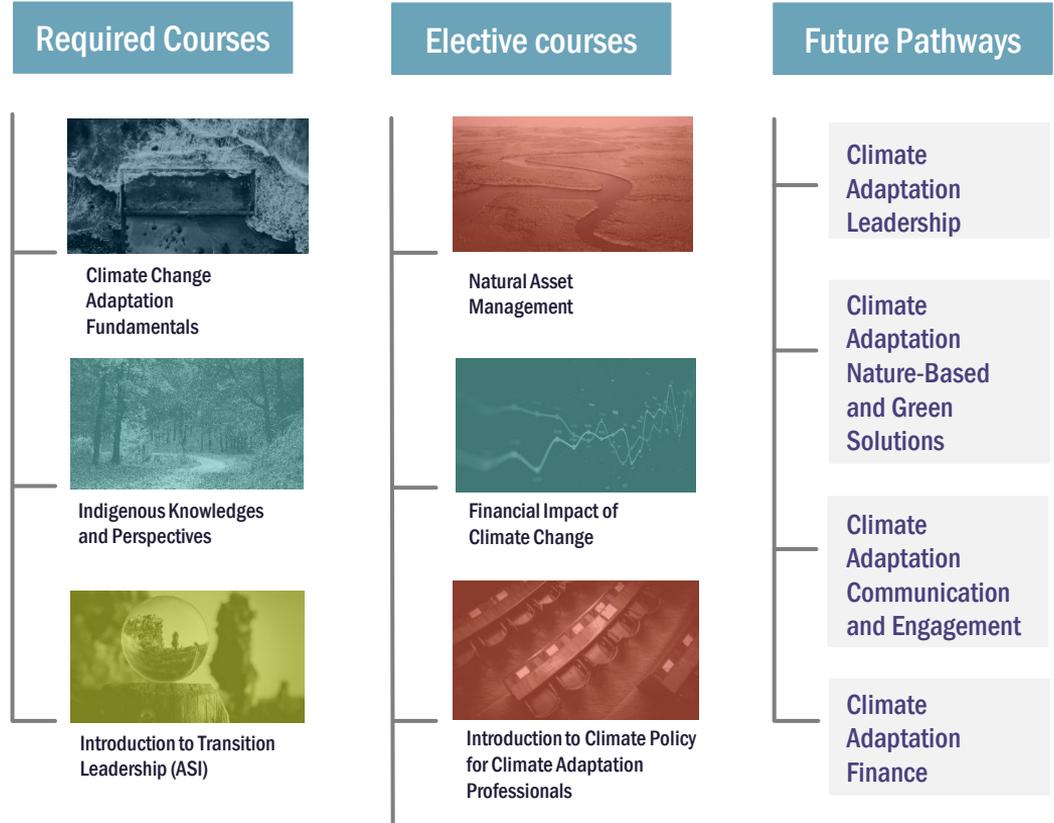
RRU-ALN Climate Adaptation Micro-Credential Programs

Micro-Credential Pathways

The Climate Adaptation Practitioner micro-credentials can be obtained through thematic pathways.

The Fundamentals micro-credential pathway consists of three required short courses + one elective course.

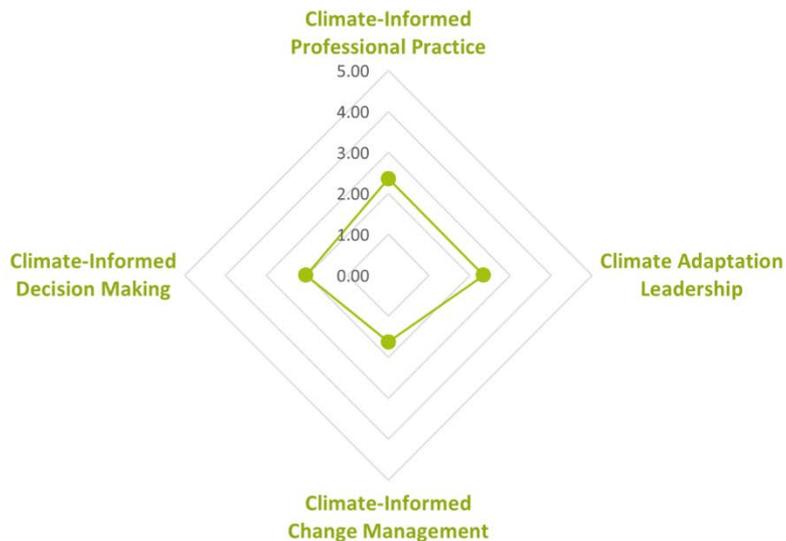
The Future (Specialist) pathways are based on two required courses: Climate Adaptation Fundamentals, + one other selected course, + two additional specialist courses from one of the four theme areas.





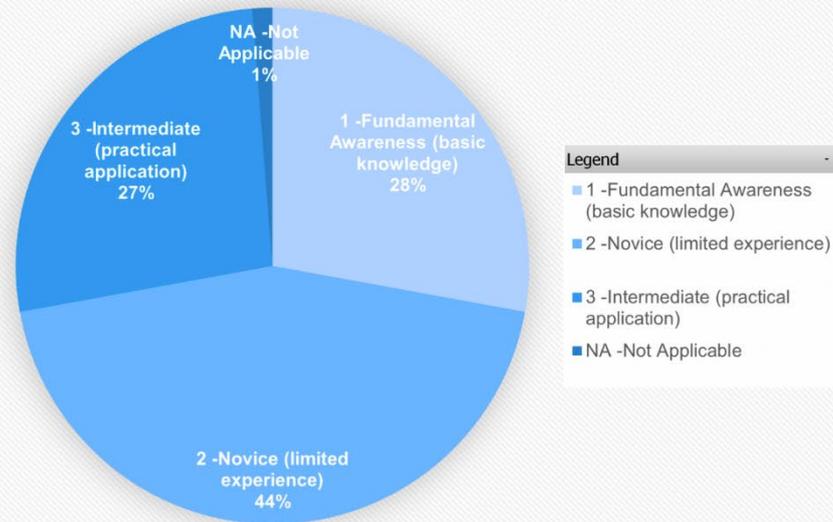
Testing with employers: CACF Pilot - September 2021

CLIMATE ADAPTATION LEADERSHIP



Domain 1

CLIMATE ADAPTATION SCIENCE & PRACTICE LITERACY



CACF V2: Climate Action Competency Framework ...restructuring



eCampusOntario Open Competency Toolkit

Dennis Green and Carolyn Levy

The eCampusOntario Open Competency Toolkit is a resource for those who are developing competency frameworks, or those using them for other purposes related to the world of work and learning. Developed collaboratively with input from both industry and education stakeholders, the toolkit provides context, templates, and examples that can be used to build frameworks that are open and shared.

 Creative Commons Attribution ShareAlike

READ BOOK



Download this book

**We invite your questions,
comments, or recommendations**



Robin.cox@royalroads.ca

Resiliencebydesign.com

Rapid upskilling for climate action

Agile pathways to workforce development





@bryanMatters



OLD SCHOOL
CREDENTIALS



NEW SCHOOL
CREDENTIALS

Critical context for understanding micro-credentials

Narrow scope

Short completion time

Relevant

Assessed

Accredited

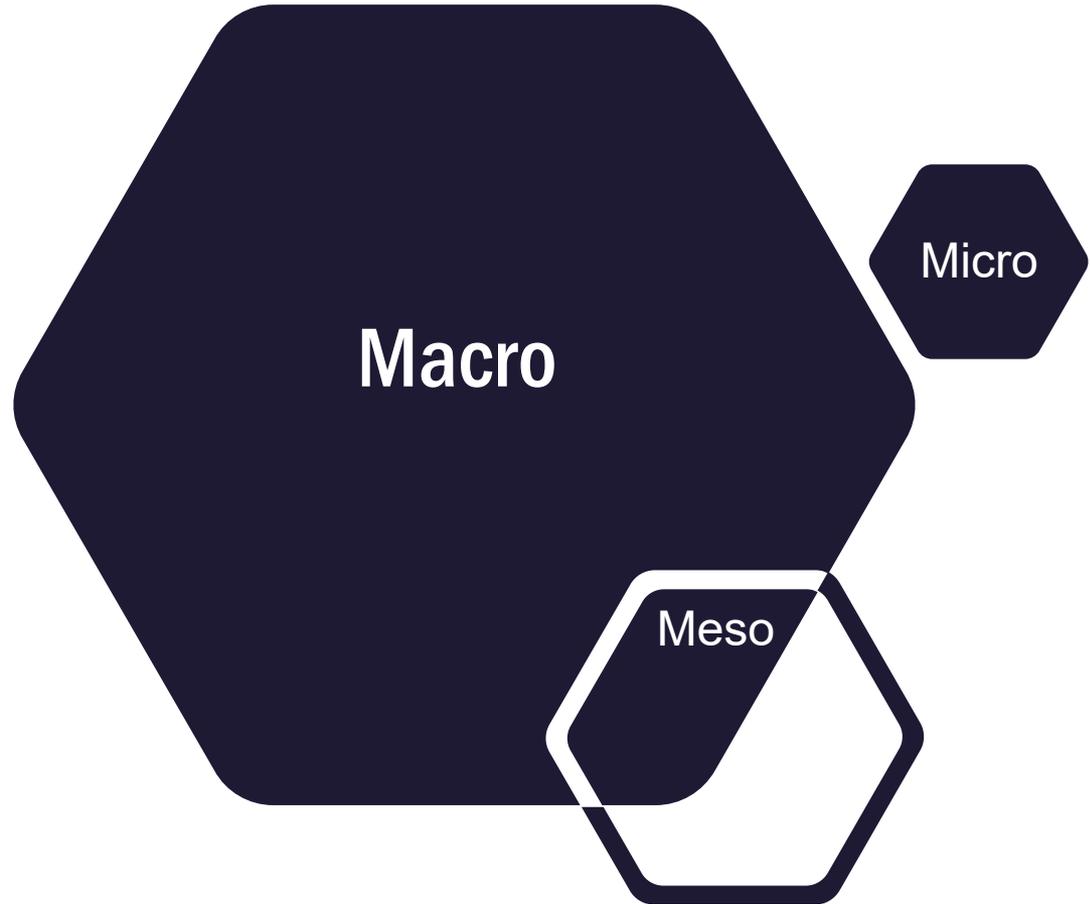
Flexible (RPL/PLAR)

Pathway enabled

Digitally-verified



THREE POTENTIAL MICRO-CREDENTIAL PATHWAY MODELS

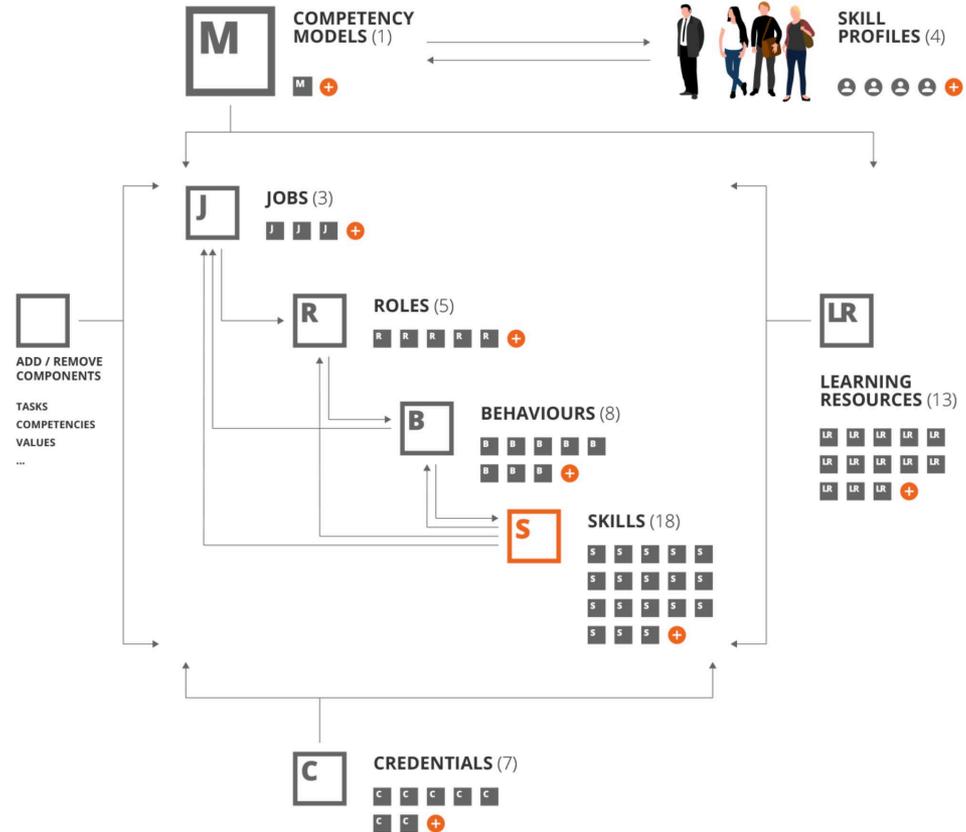


Micro pathways

- Self-directed, role-based pathways for employment-related tasks
- Upskilling pathways to address identified skill gaps to meet job requirements
- Rapid pathways to address new skill requirements

Mapping skills and competencies with job roles

Ibbaka.com provides an example of the mapping strategy for a micro-pathway approach suited to employment situations



Filter by

Subject

- Arts and Humanities
- Business
- Computer Science
- Data Science

Show more

Skills

- Account Management
- Accounting
- Adaptability
- Advertising

Show more

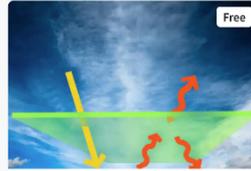
Level

- Beginner
- Intermediate
- Mixed

Duration

- 3-6 Months

195 results for "climate"



Free

The University of Chicago

Global Warming I: The Science and Modeling of Climate Change

Skills you'll gain: Strategy and Operations, Data Management, Marketing, Mathematics,...

★ 4.6 (388 reviews)
Mixed - Course - 1-3 Months



Free

University of Cape Town

Climate Change Mitigation in Developing Countries

Skills you'll gain: Leadership and Management, Modeling, Climate Change

★ 4.7 (459 reviews)
Intermediate - Course - 1-3 Months



Free

Sciences Po

Politics and Economics of International Energy

Skills you'll gain: Finance, Regulations and Compliance, Energy, Economics, Market...

★ 4.7 (1.6k reviews)
Beginner - Course - 1-3 Months



Free

The World Bank Group

From Climate Science to Action

Skills you'll gain: Entrepreneurship, Resilience, Business Psychology, Sustainability, Climate...

★ 4.7 (328 reviews)
Beginner - Course - 1-4 Weeks



University of Pennsylvania

ESG and Climate Change

Skills you'll gain: Entrepreneurship, Design and Product, Finance, Risk Management, Marketing,...

★ 4.8 (92 reviews)
Mixed - Course - 1-4 Weeks



University of Pennsylvania

The Materiality of ESG Factors

Skills you'll gain: Accounting, Audit, Budget Management, Business Analysis, Business...

★ 4.7 (356 reviews)
Beginner - Specialization - 3-6 Months

Example from a private training provider

For updated information on RRU's response to COVID-19 please visit the [RRU website](#).



[Create Account](#) [Log In](#) [Wishlist \(0\)](#) [Shopping cart \(0\)](#)

PROFESSIONAL & CONTINUING STUDIES

[Courses & Programs](#) [Certificate Programs](#) [Custom & Contract Training](#) [Global Learning & Language Centre](#)

[HOME](#) / [COURSES & PROGRAMS](#) / [PROFESSIONAL ADVANCEMENT](#) / [LEADERSHIP DEVELOPMENT](#) /
[CLIMATE CHANGE AND INFRASTRUCTURE RISK ASSESSMENT - THE PIEVC PROTOCOL](#)

Climate Change and Infrastructure Risk Assessment - the PIEVC Protocol

This six-week online course offered by the Climate Risk Institute and delivered by leading infrastructure and resilience experts will provide participants with information about, and practice with the PIEVC Protocol (Public Infrastructure Engineering Vulnerability Committee), a practical tool and process that supports the systematic assessment of the risks of extreme weather and future climate in relation to public infrastructure. It is a structured procedure using standard risk assessment processes to assess and fully document the vulnerability of infrastructure to the impacts of current and future climate at a screening level, and related risks.

Start Date: Oct 31, 2022

End Date: Dec 11, 2022

Delivery: 5 weeks, Asynch and Synch Online

Price: \$795.00 + GST

Course code: PALE096_Y2223F-02

\$795.00

[REGISTER NOW](#)

[REGISTER YOUR TEAM](#)

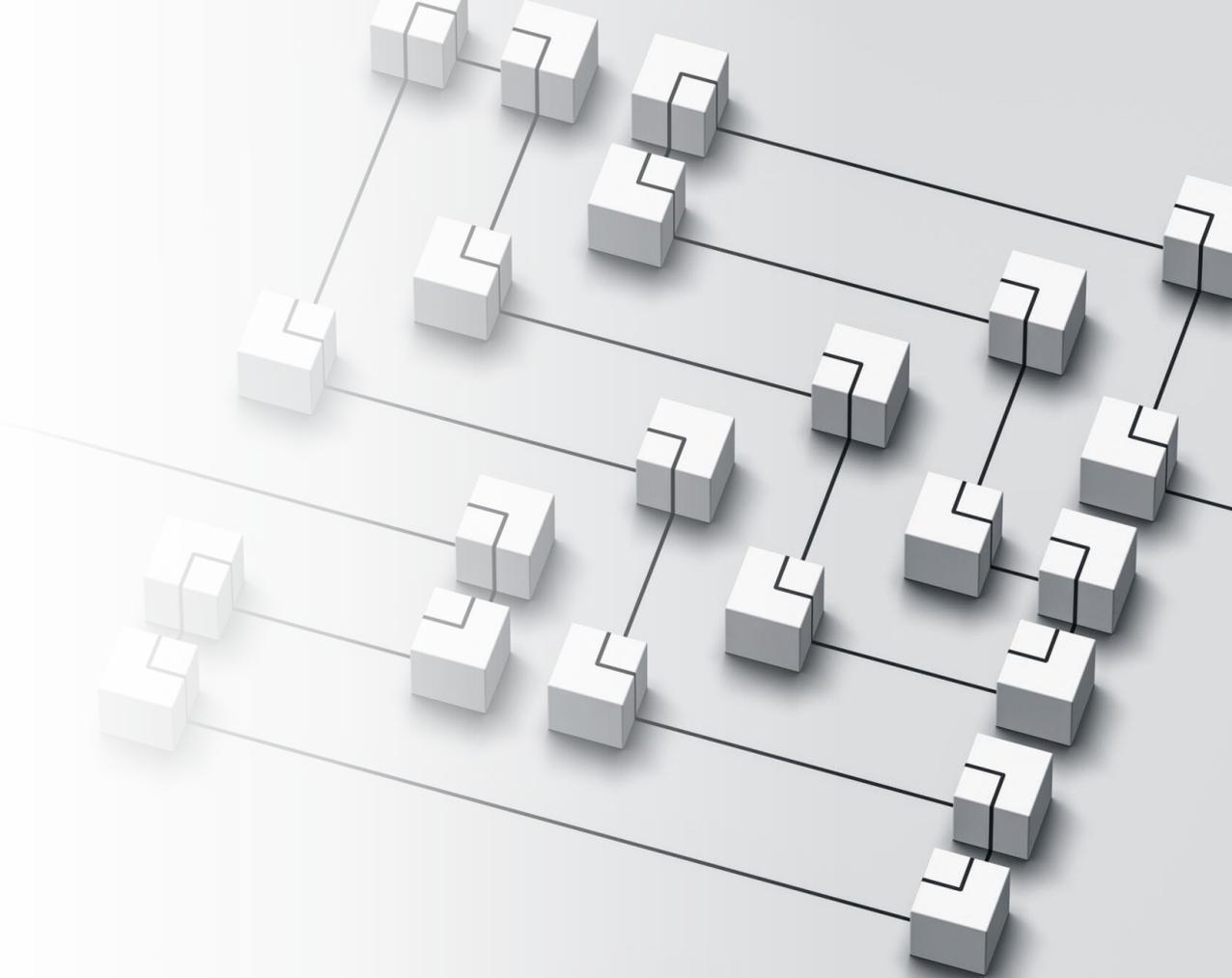
[ADD TO WISHLIST](#)



Example from a public post-secondary institution

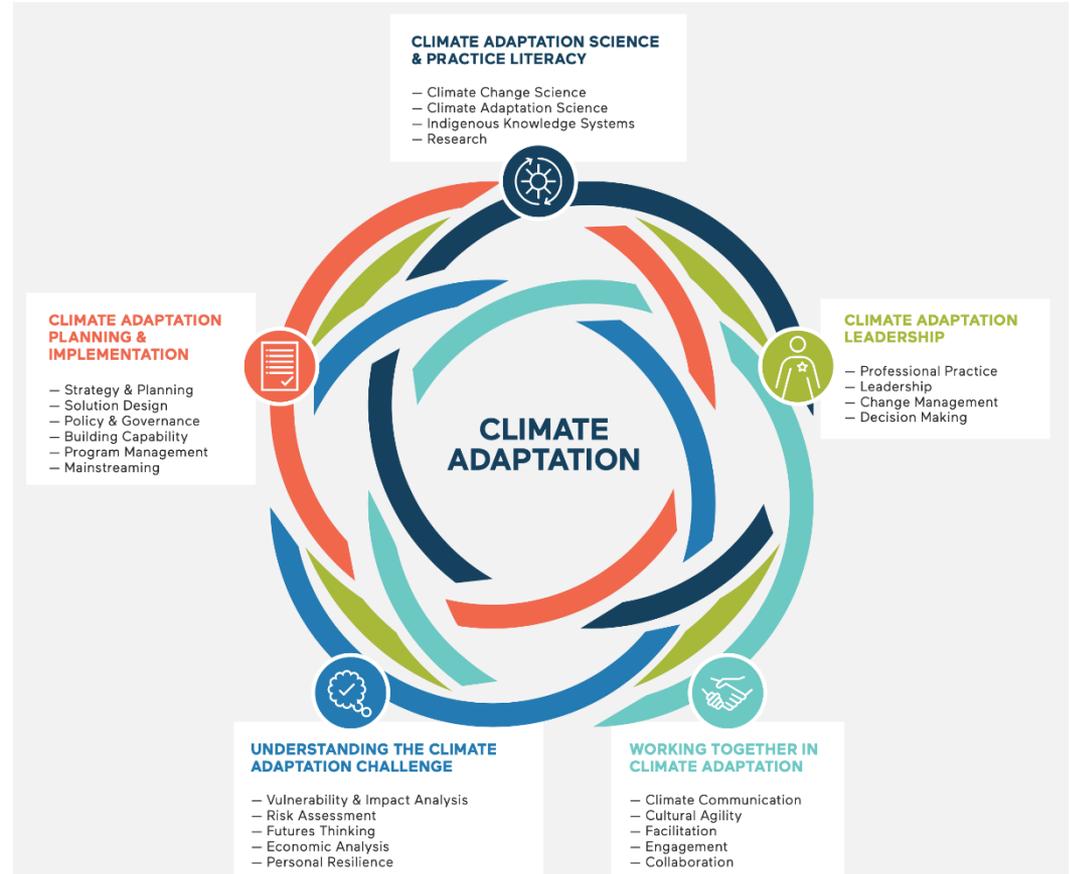
Meso Pathways

- Optimal for university or college schools or departments
- Implemented at the program level
- Horizontal and vertical pathways
- Opportunities for laddering upwards to larger credentials
- Opportunities for recognition of prior learning (RPL) as a pathway



Example: RRU – Climate Adaptation Fundamentals Micro-credential

- Create a "climate action practitioner" micro-credential and thematic micro-credential "stacks"
- Align learning outcomes and assessments with the Climate Adaptation Competency Framework (CACF)
- Create horizontal stacked pathways (fundamental knowledge and skills)
- Create vertical stacked pathways (deeper knowledge and skills)
- Award micro-credentials based on a 2 + 2 + 2 model





Micro-Credential Pathways

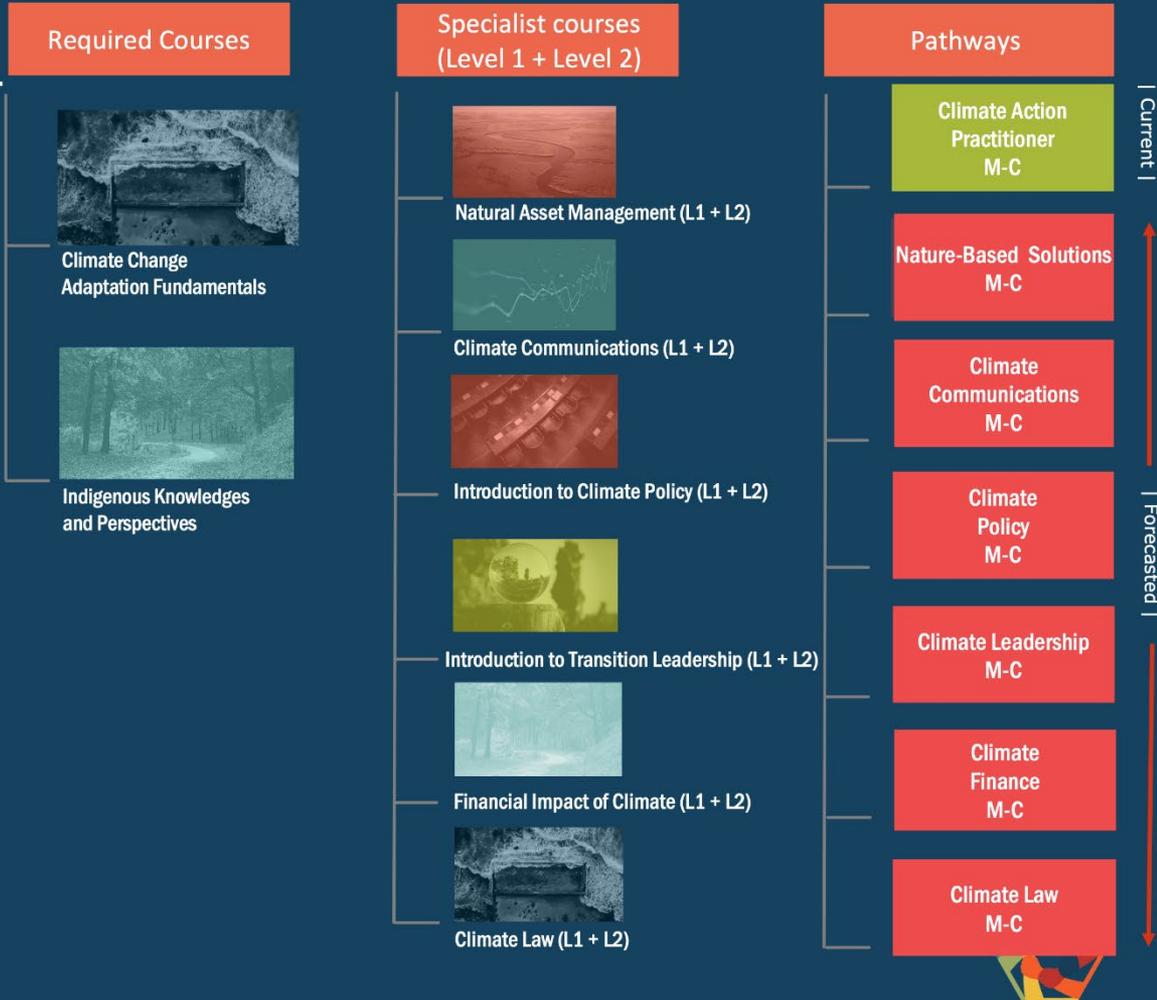
The Climate Action Practitioner Micro-Credentials (CAP M-C) can be obtained through thematic pathways – currently being run as a Prototype.

The CAP M-C pathway consists of the two Required Courses + two Level 1 Specialist Courses.

The Future (Specialist) pathways are based on the two Required Courses and two Specialist Courses (Level 1 and Level 2).

All courses are 25 notional learning hours. A 4-course Micro-credential will equate to 100 notional learning hours and 3 credits at Royal Roads University

Slide: Credit to David Porter





RRU Climate Action Micro-Credential Programs

Credentialing & Laddering

Current courses and the CAP M-C will receive a digital badge through myCreds.

The RRU Masters of Arts in Climate Action Leadership (MACAL) has a “Choose your path” option in Year 2, allowing up to 9 credits to be sourced from varying subject areas.

The CAP M-C, having equivalency of 3 credits, may *ladder* into the MACAL program. Future pathways could also be eligible.

Pathways

Climate Action Practitioner M-C

Nature-Based Solutions M-C

Climate Communications M-C

Climate Policy M-C

Climate Leadership M-C

Climate Finance M-C

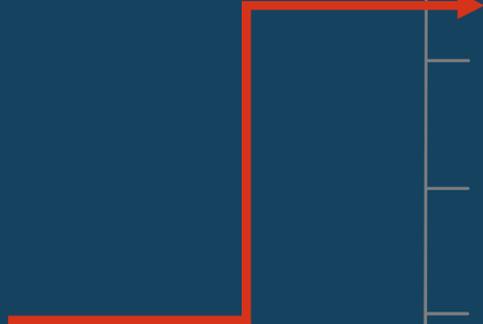
Climate Law M-C

| Current |

| ↑ |

| Forecasted |

| ↓ |



Level

Novice | Performer | Expert

Critical Information Summary

[Optional section that can improve the portable recognition value of the credential.]

[KEEP ALL LIST ITEMS, DELETE OPTIONS THAT DON'T APPLY.]

- **Title:** see above
- **Issuer:** see above
- **Country/region of the issuer:** Country/region or NA
- **Date of issue:** see above
- **Description:** see above
- **Learning outcomes:** see above
- **Effort including assessment:** XX hours
- **Duration:** XX (days, weeks or months) or NA
- **Prerequisites:** If any or None
- **Relevant learning resources:** If any or None
- **Type of recognition:** Course - summative assessment | Course - formative assessment/participation | Stack or programme | Certification | Other (describe)
- **Type of assessment:** Examination/quiz | Demonstration | Observation | Interview | Evidence package | Other (describe) | NA
- **Participation:** Online | On-site | Both
- **Supervision:** Yes | No
- **Identity verification:** 2 factor | 1 factor | None
- **Estimated ISCED level:** [e.g. 5 or 55 or 551] (unverified unless otherwise stated) | Not declared
- **Quality assurance:** External | Internal (Describe)
- **Endorsement:** No | Yes (describe)
- **Learner impact:** Degree programme admission | Academic credit(s) | Nonformal/Professional Certificate | Nonformal/Professional Certification / Advanced standing/progression
- **Credits:** XX (units/system, eg 3 ECTS) if any or None
- **Stackability:** Standalone | Designed to stack | Stack
- **Further information:** if any or None

Adapted from Oliver (2019), Orr et al (2020) and Shapiro (2020)

atingi CIS version 2021-09-02

Not included from Shapiro 2020:

Use a digital credential system such as MyCreds.ca to produce Critical Information Summaries (CIS - digital metadata) to provide enhanced verification of skills with a digital badge and/or micro-credential

Macro pathways:

How might we develop a national approach?

- Optimized for overall systems thinking
- Aligned with Ministries or Departments of Education
- Aligned with provincial micro-credential frameworks
- Aligned with national micro-credential frameworks
- Aligned with national skills frameworks

How might Canada address climate action upskilling on a national footprint?

What capabilities (knowledge, skills, and attributes) might constitute the essential components of a national climate action competency framework?

What programs, resources, and skill training opportunities currently exist in formats that could provide rapid upskilling on climate action and could be re-designed for micro-credential deployment?

What governance structure might provide an inclusive approach for a national partnership to climate action upskilling?



Courses ▾

Communities

Competencies

Network

News ▾

Resources ▾

About

Search...



CanAdapt

INSPIRING CLIMATE ACTION

[Learn More](#)



Strategy: Engage with partners to explore networked approaches to training, development and knowledge sharing



**Resilience
by DesignLab**



**Conduct
pan-Canadian
research to
inform national
requirements to
upskill for
climate action**



Upskilling for Canada's Climate Transition

- **Funded by Future Skills Centre, and designed to investigate how Canada might develop:**
 - **A national framework that adds authority, specificity and rigor to climate action micro-credentials awarded locally or regionally; and**
 - **A networked, national learning ecosystem that provides a range of employers and workers with access and opportunities for rapid upskilling and retraining in climate action related knowledge and skills, with recognized certifications that align with a national framework.**

Address a national need for climate action upskilling programs



News Contact

How We Help Business Networks Initiatives Industry Insights About

Home / News / Skillnet Ireland launch Ireland's first micro-credential programmes for climate action

Skillnet Ireland launch Ireland's first micro-credential programmes for climate action

Oct 7th, 2022

Share: Facebook Twitter LinkedIn

- All
- News
- Events
- Insights
- Press Releases
- Newsletter



Pictured at the launch of the Climate Ready Academy Stackable Microcredits in Partnership with the University of Limerick were: Ken Stockil, CEO Central Solutions, Prof. Kerstin Mey, President ULI, Senator Roisin Garvey, Paul Healy, CEO Skillnet Ireland and Brian Leddin, TD. Picture: Ailin Flack.



Questions?



RESOURCES

Building Regional Adaptation and Expertise (BRACE) Program

nrcan.gc.ca/climate-change-adapting-impacts-and-reducing-emissions/building-regional-adaptation-capacity-and-expertise-program/21324

Climate Adaptation Competency Framework

adaptationlearningnetwork.com/canadapt-capability

RRU Climate Adaptation Fundamentals Micro-Credential

<https://pcs.royalroads.ca/climate-adaptation-fundamentals-micro-credential>

Canada in a Changing Climate: Advancing our Knowledge for Action

<https://changingclimate.ca/>



Thank you!

Fill out a short **evaluation form** for today's webinar

<https://www.surveymonkey.com/r/BRACEweb3>

Learn more about the ***Building Adaptation Skills for a Changing Climate Webinar Series***

climateriskinstitute.ca/2022/06/20/coming-soon-brace-webinar-series/

Explore past Adaptation Platform webinars

climateriskinstitute.ca/platform-webinars/

Merci!

Remplir un court **formulaire d'évaluation** pour le webinaire d'aujourd'hui

[surveymonkey.com/r/BRACEweb2](https://www.surveymonkey.com/r/BRACEweb2)

En savoir plus sur la **série de webinaires Renforcer des compétences en matière d'adaptation aux changements climatiques**

climateriskinstitute.ca/2022/06/20/coming-soon-brace-webinar-series/

Explorez les webinaires précédents de la plateforme d'adaptation

climateriskinstitute.ca/platform-webinars/