**A controlled trial of contemplative-based climate resilience training**

**in university students**

## Appendix 1

Contemplative-Based Climate Resilience course outline – 10 weeks

| Week | Topic & Learning Objectives | Pre-class Assignments |
|---|---|---|
| 1 | **How the Climate Crisis Affects Personal and Public Health and How This Class Will Empower You**<br>● Identify the visible and invisible toll of climate change on physical and mental health.<br>● Highlight the disproportional impact on BIPOC communities.<br>● List 3 positive changes happening to the climate!<br>● Consider the interconnected nature of the polycrises<br>● Theory and practice of mindfulness and nature meditation practice | **Class Introduction by Drs. Jyoti Mishra, Elissa Epel & Philippe Goldin** (8 min video)<br><br>**Robert Bullard MD** - Father of environmental justice (5 min YouTube video on environmental justice).<br><br>**Daniel Schmatchtenberger** - Explanation of polycrisis (first 8 min of video).<br><br>**Rebecca Solnit** - Award-winning Writer, Historian, and Activist<br>Also read: Why It's Not Too Late: Summary FAQ by Rebecca Solnit<br><br>Meditation: **James Baraz** - (video lecture on foundational skills of mindfulness for climate resilience)<br><br>meditation: Arriving Practice by Mark Coleman (5 min)<br><br>1 page reflection |

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| 2 | **How to Cope with Climate Distress**<br><br>Observe fluctuations in climate anxiety, despair, dread or anger, and try to apply some of the methods described in the videos and meditation | **Britt Wray** - Author of "Generation Dread"<br><br>**Clover Hogan** - Australian youth activist on mobilizing mindsets for climate action)<br><br>Eve Ekman on the science of emotions<br><br>Philiippe Goldin–System change and why you make a difference (5 min video).<br><br>Meditation: Breathing with Nature<br><br>1 page reflection |
| 3 | **Climate Misinformation, Communication & Awareness**<br><br>● Understand social media's impact on attitudes and political divisiveness.<br>● Understand climate attitudes from a social psychology perspective.<br>● Fight misinformation through research and legal means.<br>● Communicate emotional topics effectively using mindful check-ins | **Sander van der Linden** PhD - Leader in the social psychology of climate misinformation<br><br>**Greg Dalton** - Climate journalist and founder of Climate One<br><br>TED talk by Katherine Hayhoe on the importance of talking about climate.<br><br>Animated video by Renee Lertzman on talking about climate change.<br><br>Meditation: Grounding with Earth<br><br>1 page reflection |
| 4 | **Why Your Mindset Matters and How Mindfulness and Purpose Can Help**<br><br>Reflect on factors that divide and unite us<br><br>What are your visions of possible futures<br><br>How might contemplative practices positively influence elected political leaders | **Rhonda Magee** JD - Professor and author on mindfulness overcoming divisiveness (video lecture).<br><br>**Susan Bauer-Wu** - Former President of Mind and Life, author of "A Future We Can Love"<br><br>**Jamie Bristow** - Mindfulness training for UK Parliament<br><br>Meditation: Exploring the Body as Doorway to Sensory Connection<br><br>1 page reflection |

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| 5 | **Nature Connectedness, Land, and Food (Outdoor Class - Nature Retreat!)**<br><br>● Experience mindful sensory immersion in nature<br>● Learn the science of nature's effect on cognition, anxiety, and health | **Mark Coleman** mindfulness in nature<br><br>**Corrina Gould** Lisjan Ohlone - Chair and spokesperson for the Confederated Villages of Lisjan<br><br>Tiokasin Ghosthorse on Indigenous perspective and Mother Earth<br><br>Use tool to measure carbon footprint in your diet<br><br>**Meditation:** Listening to Nature<br><br>1 page reflection |
| 6 | **Engaging in Climate Advocacy and Activism: What Can I Do?**<br><br>List several ways to influence climate attitudes and regulations<br><br>Search for examples of groups that are engaged in climate advocacy<br><br>Find joy in chosen activities | **Jhanisse Vaca-Daza** and **Gayle Karen Young** - Climate activism for the Amazon<br><br>**Katherine Wilkinson** - Co-founder of "All We Can Save"<br><br>**Adam Aron** - Professor at UCSD on neuroscience and climate activism<br><br>**Bayo Akomolafe**, a short essay on "What if the way we respond to the crisis is part of the crisis?"<br><br>**Meditation:** Contemplating the Four Elements<br><br>1 page reflection |

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| 7 | **How Does Social Change Happen?**<br>● List components of successful social movements.<br>● Understand "Think Global Act Local" and the colonial roots of climate change.<br>● Recognize that climate action is the work of a lifetime | **Karen O'Brien** - on quantum social change<br><br>**Joanna Macy** - Message for the class<br><br>**Maria Teresa Kumar** - Founder of Voto Latino on the importance of voting<br><br>**Christiana Musk**, creating a regenerative future<br><br>**Meditation:** Loving the Earth<br><br>1 page reflection |
| 8 | **Living with Climate Resilience and Purpose in Daily Life**<br>● Connect with others for resilience.<br>● Explore climate activism with peers.<br>● Use mindfulness and nature for rejuvenation. | **Dekila Chungyalpa** - Background on the role of faith in resilience<br><br>**Doug Abrams** - Author interviewing global icons<br><br>**Krista Tippett** - Journalist and podcast host on hope and courage (TED talk and video lecture).<br><br>**Meditation:** Cultivating Gratitude<br><br>1 page reflection |
| 9 | Group climate project presentations | |
| 10 | Group climate project presentations | |

**Appendix 2**

Missing data across the three primary outcomes (climate distress, climate self-efficacy and mental distress) ranged from 5.3% - 14.2% at baseline, 20.8% - 27.1% post-course, and 47.6% - 52.4% at the 5-month post-course follow-up.

A quick search of the literature revealed that published academic papers evaluating psychosocial training, mindfulness-based stress reduction, and behavioral wellness interventions in **college/university student populations** show a strong trend in missing data at 4 to 6 months post-course completion.

Specifically, unlike the general adult population or clinical samples in controlled clinical trials, college students show sharp fluctuations in research assessment adherence due to academic cycles such as timing of exams, term breaks, graduations). As a result, studies reveal a broad variance in missing data, ranging from well-controlled studies **13.3%** up to **57%**.

The table below summarizes peer-reviewed, published randomized controlled trials and longitudinal feasibility studies tracking baseline sample sizes (N) and the exact missing data or attrition rates at 4 to 6 months post-intervention:

**Missing Data at 4–6 Month Follow-Up in College Student Psychosocial Training Trials**

| Study Citation & Link | Participant Demographics | Psychosocial / Behavioral Training Type | Total Sample Size (N) at Baseline | Missing Data / Attrition % at 4–6 Months |
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|---|---|---|---|---|
| **Sequential MBSR Quantitative Investigation** (2025) | Undergraduate and university students | Mindfulness-Based Stress Reduction (MBSR) training | 120 | **13.3% missing data** (86.7% retention rate at the 6-month assessment milestone) |
| **Social Network Influences & Drinking Trial** (2015) | College students (heavy drinkers) | Brief motivational psychosocial intervention | 316 | **41.0% missing data** (High longitudinal attrition heavily linked to student scheduling conflicts) |
| **Resilience-Based Intervention Study** (2022) | Culturally diverse college student cohort | Universal promotive resilience and mental health training | 80 *(targeted per arm)* | **57.0% missing data** (43% study retention; author notes college trials average 30% to 57% attrition) |
| **Digital Psychological Well-being Meta-Review** (2022) | University and college students | App-based and online digital mental health interventions | Pooled multi-study sample | **36.4% missing data** (Calculated from an average 63.6% student completion rate post-intervention) |

**Methodological Drivers of Missing Data in College Settings**

- **The "Academic Workload" Effect:** Unlike clinical or older adult populations, the primary reason cited by college students for missing follow-up assessments is time constraints caused by heavy coursework and exam schedules (accounting for up to 63.4% of dropouts in some studies).
- **Digital vs. In-Person Intervention Delivery:** Psychosocial programs delivered through face-to-face peer groups or supervised laboratory sessions retain students far better at 6 months than unguided, digital mental health applications, which routinely suffer from high user attrition.

**References**

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