

Course Syllabus
Fañomnåkan (Dry Season/Spring) 2025

MI 691: Island Sustainability Perspectives from Micronesia

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Office Hours: Appointment only

Course Description:

The main aim of this course is to acquire an understanding and critically examine the principal theories, concepts, and discussions concerning island sustainability. Literature review covers different methodologies, evidence, and knowledge production. The course will encompass a range of topics, including natural resources use, traditional practices, environmental science, biocultural diversity, climate change, water, value systems, environmental justice, ethics, equity, and more. Students will learn to understand social and environmental change from various perspectives and in different contexts. Students will develop an understanding of how island ‘culturally driven’ perspectives contribute to the study of local and global sustainability. The students will demonstrate effective and coherent communication of viewpoints and arguments through both written and oral means. By using a class project, students will use the different sustainability concepts and perspectives to create a sustainable project/review that supports environmental health, biocultural diversity, social equity, and economic vitality for Micronesia.

Prerequisite: Graduate Standing or Senior Level or Consent of Instructor.

Course Content:

The course consists of three main parts.

a. Part 1: Biocultural Diversity of Micronesia: Island ontogeny, biogeography, and historical perspectives of human interactions with the environment

The course starts with explaining island ontogeny. We then zoom in on Micronesia and cover biogeography, historical ecology, and ethnography of island communities. This section discusses Indigenous and western worldviews and how these worldviews relate to sustainability. We will look at biocultural diversity and how this continues to be an important part of our island culture.

b. Part 2: How has the importance of sustainability evolved in our present-day context?

During the second part of this course, we will examine how our modern society uses our island's natural resources, but also needs resources from elsewhere in the world. We will explore our current consumption patterns and examine how island cultures maintain their relationship to nature/environment but also discuss how it changed over time. This section explains the past and current threats our island resources experience(d/s). We will discuss this on a local and global level and ask ourselves how our actions affect our local and global climate and local natural resources. We will investigate concepts such as ecological footprints and carbon footprints. We will explore how traditional values can help us protect island diversity and guide us as stewards.

We will also investigate how global actions affect our environment and talk about stewardship and advocacy. As a class, we will discuss how colonization, militarization, invasive species, and climate change affect our islands and how we can voice our concerns and take action.

c. Part 3: How do we become stewards of the island and its resources

This section investigates how we can become better stewards of the land and the ocean by incorporating different sustainability strategies. We will review the concept of triple bottom line: people, planet, and prosperity where we take environmental sustainability, social equity and economy into account. We will touch on the UN sustainability goals and discuss local initiatives and perspectives.

Class project

The class can pick one particular sustainability topic that we will be examined with the class. Through a dynamic participatory class experience we hope to become well versed in environmental sustainability. Topics we can cover are urban planning, food security, traditional medicine, eco-tourism, equitable sustainable energy solutions, etc.

The purpose of the project is to discuss how the different concepts can be applied to create a more sustainable future. The program learning outcomes will be guiding principles for our class discussions. During class students will compare and contrast traditional sustainability with contemporary aspects of sustainability and critically discuss how we as island societies in Micronesia face modern threats on a local and global level. The students also ought to incorporate unique characteristics of cultures, current and past political and social structures. Students will need to demonstrate they can communicate their project effectively. Students can create a blog, newsletter, but also by gathering literature and perspectives from their peers and create an academic opinion piece/perspective or research paper amplifying their voices.

Required Readings: All our course readings are PDF files, downloadable from our UOG Moodle site. The readings listed below might be updated when new publications are available related to the listed topics.

Alignment of Learning Objectives

MI 691 Student Learning Objectives:

With the completion of this course, students will be able to:

- (1) Explain Micronesia's unique biocultural diversity of Micronesia and how it relates to the unique characteristics of the peoples, histories, geographies, cultures, and political and social structures of Micronesia. Compare and contrast past and contemporary stewardship roles and how we can protect the region's biocultural diversity;
- (2) Critically analyze and apply various theoretical and analytical frameworks to evaluate Micronesia's biocultural diversity and the people sustainability and steward roles, with a focus on integrating Micronesian indigenous epistemologies and perspectives into contemporary environmental practices and policies;
- (3) Communicate theories and issues related to Micronesia's biocultural diversity and the people sustainability and steward roles, utilizing an interdisciplinary approach (anthropology, policy, biology) that incorporates Indigenous perspectives, both orally and in writing using scientific papers, archival collections, documentaries and newspaper articles;
- (4) Design and conduct original, independent research that contributes valuable insights into the biocultural diversity and sustainability of the Micronesian region, integrating local knowledge and practices.
- (5) Articulate the complex economic, political, and sociocultural issues facing Micronesian islands and peoples today; and
- (6) Create a community engagement strategy that addresses some issue facing a Micronesian community.
- (7)

Upon completion of the course, students will be able to:

<i>Course Learning Outcomes</i>	<i>Program Learning Outcomes (PLO)</i>	<i>Institutional Graduate Learning Outcomes (IGLO)</i>	<i>Assessment Tools</i>
Explain Micronesia's unique biocultural diversity of Micronesia and how it relates to the unique characteristics of the peoples, histories,	PLO1: Compare and contrast the unique characteristics of the peoples, histories, geography, cultures, and political and social structures of Micronesia.	IGLO 1: Demonstrate mastery of critical skills, theories, methodologies, and other content knowledge at a level that will enable them to	Quizzes, Class Participation, Essays, Papers

geographies, cultures, and political and social structures of Micronesia. Compare and contrast past and contemporary stewardship roles and how we can protect the region's biocultural diversity.		address fundamental questions in their primary area of study.	
Critically analyze and apply various theoretical and analytical frameworks to evaluate Micronesia's biocultural diversity and the people sustainability and steward roles, with a focus on integrating Micronesian indigenous epistemologies and perspectives into contemporary environmental practices and policies.	PLO2: Apply different theoretical and analytical frameworks to the study of Micronesia with an emphasis on Micronesian indigenous epistemologies and perspectives.	IGLO 1: Demonstrate mastery of critical skills, theories, methodologies, and other content knowledge at a level that will enable them to address fundamental questions in their primary area of study.	Quizzes, Papers
		IGLO2: Plan, conduct, and complete a significant research or creative project.	
Communicate theories and issues related to Micronesia's biocultural diversity and the people sustainability and steward roles, utilizing an interdisciplinary approach (anthropology, policy, biology) that incorporates indigenous	PLO3: Communicate effectively, both orally and in writing, theories and issues using an interdisciplinary approach to the study of the Micronesian region.	IGLO 1: Demonstrate mastery of critical skills, theories, methodologies, and other content knowledge at a level that will enable them to address fundamental questions in their primary area of study.	Essays, Class Participation, Presentations

perspectives, both orally and in writing, using scientific papers, documentaries, archival collections, and newspaper articles.			
		IGLO3: Exercise oral and written communication skills sufficient to publish and present work in their field.	
Design and conduct original, independent research that contributes valuable insights into the biocultural diversity and sustainability and stewardship of the Micronesian region, integrating local knowledge and practices.	PLO4: Design original, independent research that makes a valuable contribution to the Micronesian region.	IGLO2: Plan, conduct, and complete a significant research or creative project.	Papers
		IGLO3: Exercise oral and written communication skills sufficient to publish and present work in their field.	
		IGLO4: Adhere to ethical principles of academia and their respective disciplines in coursework, fieldwork, and other appropriate situations.	
Create and participate in community engagement initiatives to support and empower island communities in Micronesia, fostering sustainable practices	PLO5: Integrate research with community engagement in service to the island communities in Micronesia.	IGLO5: Exemplify, through service, the value of their discipline to the academy and the community at large, interacting productively and professionally with	Report, Presentation

and promoting biocultural diversity.		people from diverse backgrounds.	
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Relevant UOG Policies

Plagiarism is one form of cheating, in this case, the dishonest act of stealing another person's intellectual property – their words, ideas, and theories. The UOG Student Handbook defines plagiarism as including, but not limited to, “the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency in the selling of term papers or other academic materials” (p.49).

All required papers will be subject to submission for textual similarity review to *Turnitin (on Moodle)*. *Turnitin generates a report on the originality of your writing by comparing it with a database of periodicals, books, online content, student papers, ChatGPT and other AI-generated content, as well as other published works.* **Plagiarism in an assignment will automatically result in a zero (0). At the Graduate Student level, plagiarism should not happen!**

Communication Policy: University policy states that official communications will be sent using university assigned (@gotritons or @triton) email addresses. University electronic mail and messaging is to be used to enhance and facilitate teaching, learning, scholarly research, support academic experiences, and to facilitate the effective business and administrative processes of the University. (OIT policy manual, 3.10, p. 36)

FERPA: The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. These rights for students, parents and school officials can be viewed at: <http://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html>

EEO/ADA Policy and Commitment to Student Learning: The University is committed to providing an inclusive and welcoming environment for all members of our community. Federal and local laws protect the University community from any act of sex discrimination. Such acts violate the essential dignity of our community members. If you need assistance with EEO (Equal Employment Opportunity) and/or Title IX concerns, please contact the Director of EEO/ADA & TITLE IX Office at 671-735-2244, 671-735-2971, TDD 671-735-2243 or eeo-ada@triton.uog.edu.

For students covered under the ADA (Americans with Disabilities Act) who require academic accommodation(s), please contact the Student Counseling and Advising Service Disability Support Services Office to discuss your confidential request. A Faculty Notification letter from the Disability Support Services/Student Counseling and Advising Service Accommodation counselor will be provided to me. To register for academic

accommodations, please contact or visit Sallie S. Sablan, DSS counselor in the School of Education, office 110, disabilitysupport@triton.uog.edu or telephone/TDD 671-735-2460.

Course Requirements

Reflective critical essays: 5 x 7==35 points

Graded discussions: 5 x 3 =====15 points

Service project: 1 x 15 =====15 points

Preliminary presentation and research paper: 1 x 10== 10 points

Final presentation and research paper: 1 x 20 =====25 points

Grade Scale: A: 90-100 points; B: 80-89 points; C: 70-79 points; D: 60-69 points; F: below 60 points

Weekly calendar

Part 1: Biocultural Diversity of Micronesia

Biocultural diversity refers to the interconnectedness of biological and cultural diversity—how ecosystems, species, and their environments are intertwined with human cultural practices, beliefs, and knowledge systems. In the case of Micronesia, biocultural diversity is especially significant due to its unique geography, diverse Indigenous cultures, and traditional management practices. Indigenous knowledge systems and practices have evolved in close harmony with the ecosystems, and they continue to play an essential role in conservation and sustainable resource management. However, this rich diversity is under threat from climate change, environmental degradation, and cultural shifts. Preserving both the biological and cultural aspects of Micronesian heritage is critical not only for the of Micronesia but also for global biodiversity and the resilience of island ecosystems in a rapidly changing world.

1. Island Ontogeny of Micronesia

- Oceanic Islands
 - High Islands
 - Low Islands
- Idiosyncratic aspects of an island: age, geology, environmental dynamics, island connectivity
- **Literature:**
 - Gillespie RG, Clague DA. 2009. *Encyclopedia of islands*. Berkeley: University of California Press.
 - Hunter-Anderson RL. 2009. Savanna anthropogenesis in the Mariana Islands, Micronesia: Re-interpreting the paleoenvironmental data. *Archaeology in Oceania*. 44: 125-141. <https://doi.org/10.1002/j.1834-4453.2009.tb00057.x>
 - Nunn DN, Kumar L, Eliot I, McLean RF. 2016. Classifying Pacific Islands. *Geoscience letters*. 3:7. DOI 10.1186/s40562-016-0041-8

2. Biogeography of Micronesia

- Dispersal mechanisms of island biota
- Evolutionary processes: adaptation and speciation
- Species richness
- **Literature:**
 - Demeulenaere, E.; Ickert-Bond, SM 2022. Origin and evolution of the Micronesian biota: Insights from molecular phylogenies and biogeography reveal long-distance dispersal scenarios and founder-event speciation. *Journal of Systematics and Evolution* 60: 973-997. <https://doi.org/10.1111/jse.12836>

3. Human migrations into Micronesia

- Discuss recent research “Ancient DNA reveals five streams of migration into Micronesia and matrilocality in early Pacific seafarers.”
- Literature:
 - Liu YC, Hunter-Anderson R, Cheronet O, Eakin J, Camacho F, Pietruszewsky M, Rohland N, Ioannidis A, Athens JS, Douglas MT, Ikehara-Quebral RM, Bernardos R, Culleton BJ, Mah M, Adamski N, Broomandkhoshbacht N, Callan K, Lawson AM, Mandl K, Michel M, Oppenheimer J, Stewardson K, Zalzal F, Kidd K, Kidd J, Schurr TG, Auckland K, Hill AVS, Mentzer AJ, Quinto-Cortés CD, Robson K, Kennett DJ, Patterson N, Bustamante CD, Moreno-Estrada A, Spriggs M, Vilar M, Lipson M, Pinhasi R, Reich D. Ancient DNA reveals five streams of migration into Micronesia and matrilocality in early Pacific seafarers. *Science*. 2022 Jul;377(6601):72-79. doi: 10.1126/science.abm6536. Epub 2022 Jun 30. PMID: 35771911; PMCID: PMC9983687.
 - Thomson L, Butaud J-F, Geraghty PA, Wilson WH, Mabblerley DJ. 2023. Breadfruit in the Pacific Islands, its domestication and origins of cultivars grown in East Polynesia and Micronesia. *Journal of South Pacific Agriculture*. 26.
 - Zerega NJC, Ragone D, Motley TJ. 2004. Complex origins of breadfruit (*Artocarpus altilis*, Moraceae): implications for human migrations in Oceania. *American Journal of Botany*. 91: 760-766. <https://doi.org/10.3732/ajb.91.5.760>
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4. Biocultural diversity of Micronesia

- Ethnographic accounts (providing a grounding in environmental and ecological anthropology).
- Spirituality
- Biocultural heritage
- **Literature:**

- Bhati HV, Epstein Y. 2023. Protection of Biocultural Heritage in the Anthropocene: Towards Reconciling Natural, Cultural, Tangible and Intangible Heritage. *Journal of Environmental Law*, 2023, 35, 353–375.
<https://doi.org/10.1093/jel/eqad020>
- Girard F, Hall I, Frison C. 2022. Biocultural Right, Indigenous Peoples and Local Communities. Protecting Culture and the Environment. Routledge.

Part 2: Theories, methods, analytical tools

Key concepts to study sustainability and biocultural diversity include ecosystem services, which highlight the benefits provided by ecosystems to human well-being, and biocultural diversity, emphasizing the interconnectedness of biodiversity and cultural diversity. Theories such as sustainable development, resilience theory, systems, coevolutionary and cultural evolution theory help analyze the complexities and dynamics of ecological, social, and economic interactions. Additionally, Indigenous knowledge systems provide valuable insights into sustainable practices and biodiversity conservation, enriching the overall understanding of these topics. Analytical tools are essential for effectively assessing sustainability and biocultural diversity. Geographic Information Systems (GIS) facilitate spatial analysis of biodiversity data, while life cycle assessments (LCA) and ecological footprint analyses measure the environmental impacts of human activities. Participatory action research engages communities in the research process, ensuring local perspectives are considered. Qualitative research methods, multi-criteria decision analysis (MCDA), and adaptive management frameworks further enhance the ability to evaluate and manage ecological and social systems under uncertainty, fostering a holistic approach to sustainability.

Part 2: Why has sustainability become such a big topic in our contemporary context?

5. Our island's natural resources systems

What resources are we using on the different islands, which resources do we use from elsewhere? Water, watersheds, aquifer, forest, limestone rock (island)... but also fossil fuels (global).

Anthropogenic threats in Micronesia and how they affect our biocultural diversity.

These threats provoke us to rethink our lives and create a new future as the outcomes of our choices and actions are incredibly significant.

Explain the important connection between

- Micronesia as a unique Biodiversity hotspot
- Our island is vulnerable. We will cover the most important environmental threats our islands face.
- How part of our island biocultural diversity can become extinct very rapidly and other natural resources can be depleted or be polluted for a very long time.

- **Literature:**

- Harmon D. 1996. Losing species, losing languages: Connections between biological and linguistic diversity. *Southwest Journal of Linguistics*. 15: 89-109
- Ellison J. 2018. Pacific Island beaches: Values, threats and rehabilitation. Methodologies and Case Studies, Coastal Research Library 24, https://doi.org/10.1007/978-3-319-58304-4_34

6. Climate: “regional” climate variability, “global” natural and anthropogenic climate change

Pacific Ocean, regional climate variability associated with El Niño and La Niña, typhoons.

“global” natural and anthropogenic climate change

Class discussion can center around how other anthropogenic effects such as development and invasive species, colonization can exacerbate natural disaster such as Lahaina.

Literature:

- <https://www.pacificclimatechange.net/>
- Chan S, Power S, Walsh et al. 2023. Climate processes and drivers in the Pacific and global warming: a review for informing Pacific planning agencies. *Climate Change*. 176: 1-16. DOI: 10.1007/s10584-022-03467-z

7. Colonization (past and current)

Discussion on how current and past colonial practices (such as laws and regulations) continue to impact island sustainability.

Discussion on decolonization.

Literature:

- Swiderska K, Argumedo A. Wekesa C.; Ndalilo L, Song Y, Rastogi, A.; Ryan, P. 2022. Indigenous Peoples’ Food Systems and Biocultural Heritage: Addressing Indigenous Priorities Using Decolonial and Interdisciplinary Research Approaches. *Sustainability*. 14, 11311. <https://doi.org/10.3390/su141811311>

8. Contemporary development

- Many environmental struggles frequently revolve around militarization and unsustainable development infrastructure projects.
- We critically examine current contemporary problems such as quarrying and critically discuss how these resources took millennia to form but are now rapidly depleted for development.
- Talk about green and sustainable manifestations.
- Ecological footprint and carbon footprint
 - What does this mean for Guam?

- Where do our resources come from?
- How do we impact our planet?
- Climate change, the Anthropocene, and science and technology.

Literature:

- <http://www.guamhcp.com/>
- <https://guamgreengrowth.org/>

Part 3: How do we become stewards of the island and its resources -use class project

Discuss concepts such as reduce, reuse, recycle but focus more on circular economy and how that is important for islands where we have limited resources and ways to dispose of our trash.

We can pick a few topics out of many: sustainable packaging, clothing, minimalism, sustainable food choices (relating to our island, eating pelagic fish rather than too much reef fish), rooftop gardening, community gardens.

9. Stewardship

Looking back and ahead: How can our island value systems guide us to protect our resources for future generations? Explain concepts such as the triple bottom line.

Talk about regions and global efforts such as the UN sustainability goals.

Literature:

- Alhaddi, H. 2015. Triple Bottom Line and Sustainability: A Literature Review. *Business and Management Studies* 1 (2). <https://www.igi-global.com/article/sustainability/219322>
- W. Leal Filho, S. K. Tripathi, J. B. S. O. D. Andrade Guerra, R. Giné-Garriga, V. Orlovic Lovren & J. Willats (2018): Using the sustainable development goals towards a better understanding of sustainability challenges, *International Journal of Sustainable Development & World Ecology*. <https://doi.org/10.1080/13504509.2018.1505674>

10. Protecting our natural resources and biocultural diversity

Why is it important to protect endemic species? We will discuss how they are part of one's cultural identity, biocultural heritage. Native and endemic plants have Indigenous names specific to each island in Micronesia. Indigenous words can also refer to certain cultural practices tied to this biodiversity.

Literature:

- Demeulenaere E, Yamin-Pasternak S, Rubinstein, DH, Lovecraft AL, Ickert-Bond SM. 2021. Indigenous spirituality surrounding Serianthes trees in Micronesia: Traditional practice, conservation and resistance. *Social Compass* 68(4): 548-561. <https://doi.org/10.1177%2F00377686211032769>
- Demeulenaere, E., Rubinstein, D.H.; Yamin-Pasternak, S.; Lovecraft, A.L.; Ickert-Bond, S.M. 2021. Recollections of Fadang and Fanihi: The taste and smell of CHamoru bygone foods and the challenge of endangered island species. *Pacific Asia Inquiry* 11: 80-105.

11. Sustainable practices in every sector

We will discuss sustainable management practices that can be applied to all sectors of society. Natural resources management uses the ridge to reef approach, which has been a traditional practice in Micronesia for thousands of years. Other modern sustainability practices can be green roofs, green building codes, green infrastructure, renewable energy, etc.

Literature:

- Adshead, D., Roman, O., Thacker, S., & Hall, J. W. (2021). Infrastructure strategies for achieving the global development agendas in small islands. *Earth's Future*, 9, e2020EF001699. <https://doi.org/10.1029/2020EF001699>

12. Environmental justice

Environmental justice is central when talking about environmental and biocultural rights. Depending on the class project we will specifically assign reading materials. I will also have an environmental group present on the topic.

- Demeulenaere, E., Ickert-Bond, S.M. 2023. Guam's last *håyun lågu* tree (*Serianthes nelsonii*) in peril. *Conservation Science and Practice* <https://doi.org/10.1111/csp2.13019>
- Demeulenaere, E. 2021. Prutehi Litekyan: A Social Movement to Protect Biocultural Diversity and Restore Indigenous Land Sovereignty on Guåhan. In: *Indigenous Peoples, Heritage and Landscape in the Asia Pacific: Knowledge Co-Production and Empowerment*, eds. Acabado, S.; Kuan, D. New York and Milton Park: Routledge.

13. Social equity

Environmental inequality will be discussed, and equitable management practices will be explored for the class project.

Literature:

- Crosman, K.M., Allison, E.H., Ota, Y. *et al.* Social equity is key to sustainable ocean governance. *npj Ocean Sustain* 1, 4 (2022). <https://doi.org/10.1038/s44183-022-00001-7>

14. An economy that supports our island communities

A realistic view on our modern world is needed to ensure both our economy and natural resources are viable for future generations. We will look into sustainable economies and see what strategies we can employ to sustain our natural resources.

Literature:

- Lan Yang, Chengdong Wang, Huajun Yu, Meijie Yang, Shoubing Wang, Anthony S.F. Chiu, Yutao Wang. 2020. Can an island economy be more sustainable? A comparative study of Indonesia, Malaysia, and the Philippines *Journal of Cleaner Production*, 242. <https://doi.org/10.1016/j.jclepro.2019.118572>

15. Project presentation

Project presentations can occur individually or in groups. A outline will be provided by the instructor.