School for International Training | 1 Kipling Road, PO Box 676 | Brattleboro, VT 05302-0676 USA
Tel 888 272-7881 | Fax 802 258-3296 | studyabroad.sit.edu

Mediterranean Island Ecosystems

ENVI-3000 (3 credits)

Italy: Island Ecosystems in the Mediterranean

This syllabus is representative of a typical semester. Because courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester.

Course Description

Geographic isolation shapes the distribution, evolution, and diversity of species across island habitats. The resulting ecosystems, both human and natural, converge and, at times, diverge to bring about unique constellations of organisms and human-nature interactions. This course examines these phenomena through immersive field experiences in Sicily and Sardinia, where isolation and the Mediterranean climate have created unique living laboratories for understanding ecological processes. Students investigate how factors like island size, distance from mainland, geological history, and habitat diversity influence species colonization, adaptation, and endemism. The course emphasizes how these natural processes interact with millennia of human presence, creating complex socio-ecological systems. Through direct engagement with local communities, students explore how island characteristics shape both biological and cultural diversity, and how this understanding can inform modern conservation efforts in the face of global climate change.

Learning Outcomes

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

- Analyze ecological concepts and social drivers that shape marine, coastal, and terrestrial ecosystems
- Apply island biogeography theories to Mediterranean contexts
- Explain ecosystem processes and their dependence on other natural phenomena
- Discuss the origins and processes of endemism and current threats

Language of Instruction

This course is taught in English, and where Italian is used, translation to English will be provided.

Instructional Methods

SIT's teaching and learning philosophy is grounded in the experiential learning theory developed by Kolb (1984; 2015) and informed by various scholars, such as Dewey, Piaget, Lewin, among others. Experiential learning theory recognizes that learning is an active process that is not confined to the formal curriculum; "knowledge is created through the transformation of experience" (Kolb, 2015, p. 49). Learning involves both content and process. Learning is holistic and happens through various life experiences upon which students draw to generate new ways of knowing and being. Learning involves a community and is a lifelong endeavor. Learning is transformational. The suggested four step-cycle of a *concrete experience*, *reflective observation*, *abstract conceptualization*, and *active experimentation* embedded in the experiential learning model is not linear and might not always happen in that specific order, as any learning is highly context dependent. These stages of taking part in a shared experience; reflecting on that experience by describing and interpreting it; challenging their own assumptions and beliefs to generate new knowledge; and ultimately applying new knowledge, awareness, skills, and attitudes in a variety of situations and contexts are important for students to engage in to become empowered lifelong learners.

Required Texts
See the course schedule for a full list of reading assignments.

Attendance and Participation

Due to the nature of SIT Study Abroad programs, and the importance of student and instructor contributions in each and every class session, attendance at all classes and for all program excursions is required. Criteria for evaluation of student performance include attendance and participation in program activities. Students must fully participate in all program components and courses. Students may not voluntarily opt out of required program activities. Valid reasons for absence – such as illness – must be discussed with the academic director or other designated staff person. Absences impact academic performance, may impact grades, and could result in dismissal from the program.

Late Assignments
SIT Study Abroad programs integrate traditional classroom lectures and discussion with field-based experiences, site visits and debriefs. The curriculum is designed to build on itself and progress to the culmination (projects, ISP, case studies, internship, etc.). It is critical that students complete assignments in a timely manner to continue to benefit from the sequences in assignments, reflections and experiences throughout the program.
Example: Students may request a justified extension for one paper/assignment during the semester. Requests must be made in writing and at least 12 hours before the posted due date and time. If reason for request is accepted, an extension of up to one week may be granted at that time. Any further requests for extensions will not be granted. Students who fail to submit the assignment within the extension period will receive an 'F' for the assignment.

Assignments and Evaluation

Assignment Descriptions and Grading Criteria

Participation (10%)

Active participation is essential for learning in this course. Students are expected to engage meaningfully in field activities, contribute to group discussions, and demonstrate professional conduct when working with local communities. The participation grade reflects both the quantity and quality of student engagement throughout the course.

Biogeography Field Report (35%)

Students will conduct field observations in a designated terrestrial, coastal, or marine habitat. Students will collect data *in* situ on species diversity, abundance, possible endemism, and distinct habitat features. After data collection, students will develop a five-page field report that includes a description of the ecosystem. The data collected will summarize findings and analyze data using island biogeography theory, with a specific focus on local case studies.

Integrative Group Presentation (35%)

Divided into groups, students will work collaboratively to produce and present a twenty-minute oral presentation to the class. The presentation should focus on a topic that integrates concepts of island biogeography, ecosystem connectivity, and human influence. Each group will present a different topic. A spectrum of topics will be established by the course instructor; however, groups can select their own topic, if they prefer. The presentation should glean and synthesize information from course lectures, course readings, related publications not included in the syllabus, site visits, local texts, and conversations they have with community members.

Peer Learning (20%) Drawing on the Integrative Group Presentation assignment, each student will write a 500-word Canvas post on one of the presentations. Students should discuss and reflect on the content of the presentation, including their learning, how their learning experience coincides or differs from that of the presenters, and what they would recommend including in the presentation content to enhance its scope.

Grading Scale

94-100%	A
90-93%	A-
87-89%	B+
84-86%	B
80-83%	B-
77-79%	C+
74-76%	C
70-73%	C-
67-69%	D+
64-66%	D
below 64	F

Program Expectations

- **Show up prepared.** For an interactive course to succeed, you must be present, on time, and have your readings completed and points in mind for discussion or clarification. Being prepared with these elements raises the level of class discussion for everyone. Moreover, the content of this course is learned collaboratively, meaning that when a student isn't here, they take away from everyone's opportunity to learn. The only way to maximize our collective learning potential is if we are all here contributing. Valid reasons for absence – such as illness – must be discussed with the academic director or other designated staff person. Absences impact academic performance, may impact grades, and could result in dismissal from the program
- **Submit assignments on time:** SIT Study Abroad programs integrate traditional classroom lectures and discussion with field- based experiences, site visits and debriefs. The curriculum is designed to build on itself and progress to the culmination (projects, ISP, case studies, internship, etc.). It is critical that students complete assignments in a timely manner to continue to benefit from the sequences in assignments, reflections and experiences throughout the program.
- **Bring your curiosity:** Ask questions in class**.** Engage the guest lecturers, as these are often very busy professionals who are doing us an honor by coming to speak. Remember, there are no foolish questions, and your inquiries might help others in class who have similar ideas/thoughts. By actively participating and showing curiosity, you demonstrate respect for our guests and contribute to creating a dynamic learning environment for everyone.
- **Maintain academic Integrity:** As members of a learning community, we all want to submit work that reflects our own ideas and efforts. Even if it is unintentional, plagiarism can have serious consequences. Before you submit each assignment, ask yourself these questions:

  - Did I reference ideas, quotes, phrases, or facts I read about in a book, article, or website, without citing the author and year of the source where I read about them?
  - Did I paraphrase by changing only a word or two or moving the words around?
  - Did you answer "yes" to any of the above questions? If so, you are committing plagiarism and need to give credit to appropriate sources before you submit your assignment

- **Principled Disagreement**: Learning often involves discomfort. Some discomfort can facilitate personal and collective growth. You, your peers, guest lecturers, instructors, and local constituents, have diverse experiences, values, beliefs, affiliations, and identities. Reflecting on these differences can be emotionally challenging, even when it deepens self-awareness and mutual understanding. In this course, we aim to encourage brave spaces were principled disagreement is encouraged rather than avoiding difficult conversations. *This is challenging work, and we will inevitably make mistakes.* Our goal is to thoughtfully critique ideas rather than attacking individuals. We aim to embrace productive discomfort and minimize unproductive discomfort, striving for principled disagreement.

- **Content Considerations**: Some texts and activities you will encounter in this course delve into sensitive topics that may be emotionally and intellectually challenging. Our classroom is a brave space where we can engage with challenging ideas, question assumptions, and navigate difficult topics with respect and maturity. As possible, I will flag content and activities that are especially graphic or intense, so we are prepared to address them soberly and sensitively. If you are struggling to keep up with the work or participate in the course because of the nature of the content and activities, you should speak with me and/or seek help from counseling services.
- **Our social identities** – Our social identities - race/ethnicity, class, gender, sexual identity, religion, mental and physical ability, size, national origin, citizenship status, and more – shape how we are perceived, represented, and treated. They also influence what knowledge and learning is deemed valuable and legitimate. To challenge hegemonic paradigms and perspectives, this course intentionally includes readings, topics, videos, and assignments from authors and perspectives of diverse backgrounds. However, there may be gaps we have overlooked. Your constructive feedback is always welcome on how to make this course more inclusive and transformative.

- **Storing Your Work**: Keep several copies of your work as back up and keep one copy accessible to you through an online forum, such as an attachment in your email, the course learning management system, or cloud-based storage. This way your work will always be available to despite technical issues. Lost files, deleted drives, or computer crashes are not excuses for late, missing work.
- **Personal Technology Use:** Cell phones and other personal electronics can be used for taking notes and other class activities. Off-task usage is not acceptable. You may be marked as absent for habitually using them for something other than classroom activities.
- **Course Communication**: Although the course calendar provides a broad overview and the general sequence of work and assignments for the course, what we accomplish in class will vary, and revisions to the calendar will be posted at the course site. You will need to check the course site regularly. You are responsible for letting me know about any network-related problems that prevent you from accessing or submitting assignments.
- **Classroom recording policy:** To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

SIT Policies and Resources

Please refer to the SIT Study Abroad Handbook and the Policies section of the SIT website for all academic and student affairs policies. Students are accountable for complying with all published policies. Of particular relevance to this course are the policies regarding: academic integrity, Family Educational Rights and Privacy Act (FERPA), research and ethics in field study and internships, late assignments, academic status, academic appeals, diversity and disability, sexual harassment and misconduct, and the student code of conduct.

Please refer to the SIT Study Abroad Handbook and SIT website for information on important resources and services provided through our central administration in Vermont, such as Library resources and research support, Accessibility Services, Counseling Services, Title IX information, and Equity, Diversity, and Inclusion resources.

Course Schedule

**Please be aware that topics and excursions may vary to take advantage of any emerging events, to accommodate changes in our lecturers' availability, and to respect any changes that would affect student safety. Students will be notified if this occurs.*

Module 1: Introduction to Island Biogeography

In this module, students explore the unique geological and ecological foundations of Mediterranean island ecosystems. Through immersive field experiences, students witness firsthand the complex ecological processes that shape species distribution and adaptation on Mediterranean islands. The module emphasizes how island formation processes, human presence, and geographical isolation have shaped current biodiversity patterns and resulted in distinct ecological niches among island ecosystems.

Sessions may include:

- Geological history of the Mediterranean
- Island formation processes in the Mediterranean
- Ancient human groups and ecosystem interactions in Sicily and Sardinia
- Biological diversity theory
- Island biogeography theory

Required Readings:

Bavestrello, G., Betti, F., Calcagnile, L., Canessa, M., D'Elia, M., Quarta, G., & Bo, M. (2023). The paleo-community of the Sciacca red coral. *Facies*, *69*(2), 7.

Di Maggio, C., Madonia, G., Vattano, M., Agnesi, V., & Monteleone, S. (2017). Geomorphological evolution of western Sicily, Italy. *Geologica Carpathica*, *68*(1), 80.

Romano, V., Catalano, G., Bazan, G., Calì, F., & Sineo, L. (2021). Archaeogenetics and landscape dynamics in Sicily during the Holocene: A review. *Sustainability*, *13*(17), 9469.

Thompson, J. (2020). *Plant Evolution in the Mediterranean*. Oxford University Press. 1-33 p.

Vogiatzakis, I. N., Mannion, A. M., & Sarris, D. (2016). Mediterranean island biodiversity and climate change: The last 10,000 years and the future. *Biodiversity and Conservation*, 25(13), 2597-2627.

Whittaker, R. J., Fernández-Palacios, J. M., & Matthews, T. J. (2023). *Island biogeography: Geo-environmental dynamics, ecology, evolution, human impact, and conservation 3rd ed*. Oxford University Press. Chapters 1, 2, and 3.

Module 2: Marine, coastal, and terrestrial ecosystems of Sicily and Sardinia

This module delves into the unique features of the terrestrial communities, coastal assemblages, and marine environments of Sicily and Sardinia. Students engage in learning about biodiversity hotspots, unique mountain environments, threatened wetlands, and key impacts of human habitation on sensitive ecosystems.

Sessions may include:

- Marine species and their distribution across Sicily and Sardinia: sharks, bluefin tuna, dolphins, turtles, and invertebrates
- Wetlands and their roles in coastal protection, carbon sequestration, and wildlife habitat
- Mediterranean terrestrial environments: threatened forests, woodlands, and scrub
- Terrestrial fauna and flora of Sicily and Sardinia
- Impacts of historical fishing practices and contemporary harvest methods on coastal and marine ecosystems

Required Readings:

De Angelis, P., D'Andrea, L., Franceschini, S., Cataudella, S., & Russo, T. (2020). Strategies and trends of bottom trawl fisheries in the Mediterranean Sea. *Marine Policy*, *118*, 104016.

Di Lorenzo, M., Sinerchia, M., & Colloca, F. (2018). The North sector of the Strait of Sicily: a priority area for conservation in the Mediterranean Sea. *Hydrobiologia*, 821, 235-253.

Lussu, M., Marignani, M., Lai, R., Loi, M. C., Cogoni, A., & Cortis, P. (2019). A synopsis of Sardinian studies: Why is it important to work on island orchids? *Environmental Monitoring and Assessment*, 192(2), 1-19.

Médail, F. (2022). Plant biogeography and vegetation patterns of the Mediterranean islands. *The Botanical Review*, *88*(1), 63-129.

Patti, B., Torri, M., & Cuttitta, A. (2022). Interannual summer biodiversity changes in ichthyoplankton assemblages of the Strait of Sicily (Central Mediterranean) over the period 2001–2016. *Frontiers in Marine Science*, *9*, 960929.

Schrader, J., Wright, I. J., Kreft, H., & Westoby, M. (2021). A roadmap to plant functional island biogeography. *Biological Reviews*, *96*(6), 2851-2870.

Theodoropoulou, T. (2019). Fishing together, fishing on its own: Fish exploitation patterns at the Neolithic Alepotrypa cave (Diros, Greece) and Aegean prehistoric fishing traditions. *International Journal of Osteoarchaeology*, *29*(3), 395-406.

Module 3: Ecosystem connectivity across the western Mediterranean landscape

Ecological connectivity is central to island habitats. Species occupy ecosystems for diverse needs during their lifecycle, including protection, reproduction, feeding, and parental care. In this module, students engage in learning about connectivity across Mediterranean ecosystems including species adaptation and ecological processes in terrestrial, coastal, and marine environments (*in situ*).

Sessions may include:

- Corridors and habitat connectivity
- Ecological connectivity in freshwater and marine environments
- Landscape fragmentation
- Case studies of specific taxa and ecosystem connectivity across the Mediterranean

Required readings:

Chiarucci, A., Guarino, R., Pasta, S., Rosa, A. L., Cascio, P. L., Médail, F., ... & Zannini, P. (2021). Species–area relationship and small-island effect of vascular plant diversity in a young volcanic archipelago. *Journal of Biogeography*, *48*(11), 2919-2931.

Gil-Tena, A., Brotons, L., Fortin, M. J., Burel, F., & Saura, S. (2013). Assessing the role of landscape connectivity in recent woodpecker range expansion in Mediterranean Europe: forest management implications. *European Journal of Forest Research*, *132*, 181-194.

Hidalgo, P. J., Hernández, H., Sánchez-Almendro, A. J., López-Tirado, J., Vessella, F., & Porras, R. (2021). Fragmentation and connectivity of island forests in agricultural Mediterranean environments: A comparative study between the Guadalquivir Valley (Spain) and the Apulia Region (Italy). *Forests*, *12*(9), 1201.

Isola, F., Lai, S., Leone, F., & Zoppi, C. (2022). Strengthening a regional green infrastructure through improved multifunctionality and connectedness: Policy suggestions from Sardinia, Italy. *Sustainability*, *14*(15), 9788.

Mari, L., Melià, P., Fraschetti, S., Gatto, M., & Casagrandi, R. (2020). Spatial patterns and temporal variability of seagrass connectivity in the Mediterranean Sea. *Diversity and Distributions*, *26*(2), 169-182.

Module 4: Endemism in the Mediterranean region

This module explores the concept of endemism within the Mediterranean region. The Mediterranean's unique geographical context has led to the evolution of numerous plant and animal species found nowhere else. Students will have the opportunity to observe and learn about specific endemic species in their native habitats.

Sessions may include:

- Island and continental endemism
- Endemism hotspots of the Mediterranean region
- Case studies of regional, endemic plant and animal species
- Human threats to endemic species in Sicily, Sardinia, and other Mediterranean island spaces (Sardinian thrushes, Corsican red deer, *Zelkova sicula*)

Required readings:

Catania, R., Nobile, V., & Bella, S. (2022). The bees (Hymenoptera, Apoidea) of Egadi's Archipelago (Sicily, Italy). *Biogeographia–The Journal of Integrative Biogeography*, *37*(2).

Di Gristina, E., Bajona, E., Raimondo, F. M., & Domina, G. (2022). Conservation status of the endemic vascular flora of Sicily. *Flora Mediterranea*, *32*, 317-325.

Fernández-Palacios, J. M., Kreft, H., Irl, S. D., Norder, S., Ah-Peng, C., Borges, P. A., ... & Drake, D. R. (2021). Scientists' warning–The outstanding biodiversity of islands is in peril. *Global Ecology and Conservation*, *31*, e01847.

Fois M, Fenu G, Cañadas EM, Bacchetta G (2017) Disentangling the influence of environmental and anthropogenic factors on the distribution of endemic vascular plants in Sardinia. *PLoS ONE* 12(8): e0182539.

Muscarella, C., & Baragona, A. (2017). The endemic fauna of the Sicilian islands. *Biodiversity Journal*, *8*(1), 249-278.

Thompson, J. (2020). *Plant Evolution in the Mediterranean*. Oxford University Press. 34-85 p.

