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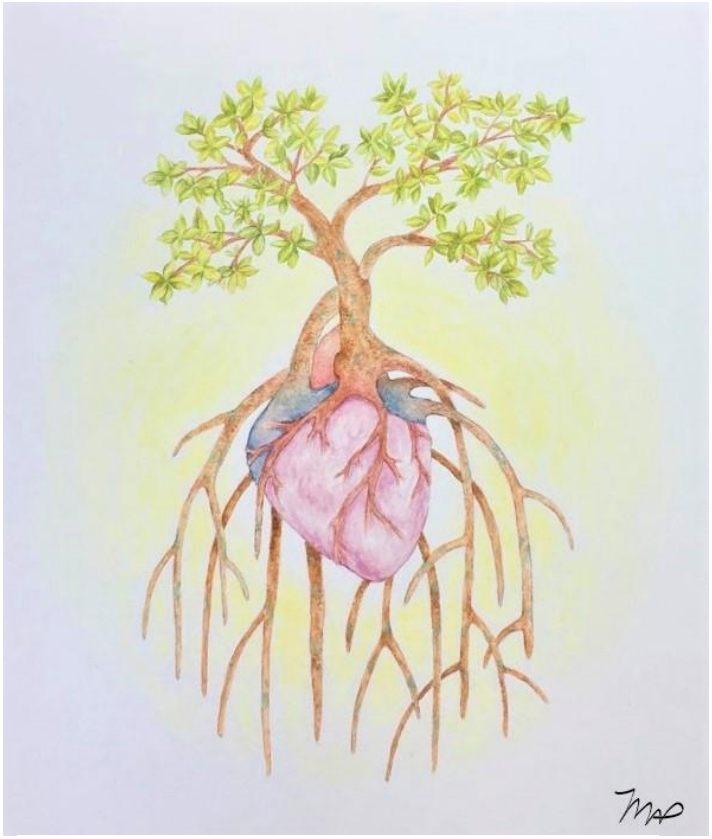
Interdisciplinary methods in social-ecological research – Fall, 2022
Department of Global and Sociocultural Studies, Hybrid
In partnership with the Kimberly Green Latin American and Caribbean Studies Center (LACC)

Professor: Dr. Simone Athayde, Associate Professor, Kimberly Green Latin American and Caribbean Center and Department of Global and Sociocultural Studies. Email: sathayde@fiu.edu.
Days/Times: Wednesdays 11 am – 12:15 pm, Chem & Physics 11, and asynchronous activities
Office hours: Tuesdays, 1:00-2:00 PM
Office: LACC/ DM #364; Tel: 305.348.0391.



Drawing: Courtesy by Melissa Lau.

Course Overview and Purpose:

This foundational course is designed to explore theories, methods, tools, and applications of inter- and trans-disciplinary research across academic disciplinary fields in the biophysical, social sciences and humanities, as well as articulating academic and societal knowledge. The course contributes to strengthening FIU graduate training in five main interrelated areas: 1) history, politics and theories of inter- and trans-disciplinary science; 2) inter- and trans-disciplinary research design and ethics, methods and tools; 3) Indigenous research methodologies; 4) bridging the Science-Policy interface; and 5) academic structures, career paths and applications of interdisciplinary research.

The course is designed to fill a critical gap for training students interested in developing skills, methods and tools for inter- and trans-disciplinary research that integrates knowledge within academia and between academia and society.

The course is especially suited for students early in their programs or career, as it will prepare them to understand and conduct interdisciplinary research and collaborations during and after their academic programs. It will also provide them with international and global competencies based on the international content and case-studies approached in the course. Methods are approached in a broad and inclusive way, mostly connected to 3 main aspects of social-ecological systems - SES (based on Biggs et *al*. 2022): a) methods for scoping and collecting data about SES; b) methods for analyzing SES; c) methods for inter- and trans-disciplinary engagement, knowledge co-production, evaluation and decision-making.

The course will be developed through a hybrid classroom approach, with a combination of two periods of mandatory classes with face-to-face interaction in the FIU campus, and on-line asynchronous

activities. The course will approach different integrative themes to explore interdisciplinary theories and methods in social-ecological research, illustrated from case-studies from around the world, as well as from students' experiences and research foci or interests.

Individual and group assignments will focus on developing creativity and reflexive practice, allowing for a diversity of formats, including integrative mini-research projects, policy-oriented essays, wiki pages, visual stories and infographics, case-study reports, workshop development, among others.

Required Texts: This course adopts the following textbooks:

1) Creswell, J. and J. D. Creswell. 2018. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 5th ed. Los Angeles: Sage. Available for download from the following link: https://www.docdroid.net/XAQ0IXz/creswell-research-design-qualitative-quantitative-and-mixed-methods-approaches-2018-5th-ed-pdf

2) Chilisa, B. 2020. *Indigenous Research Methodologies.* 2 ed. Sage: Thousand Oaks. Available for download from the following link: https://vdoc.pub/download/indigenous-research-methodologies-4m8mqe7vo4q0

3) Biggs, R.; A. Vos; R. Preiser; H. Clements; K. Maciejewski; and M. Schluter. 2022. *The Routledge Handbook of Research Methods for Social-ecological Systems*. Routledge: Oxon and New York. Available for download from the following link: https://library.oapen.org/bitstream/handle/20.500.12657/49560/9781000401516.pdf.

All other reading materials will be made available on Canvas via link to the FIU library, or directly provided to the students by the instructor.

Prerequisites: None.

Office Hours: My regular office hours will be Tuesdays from 1:00-2:00 PM, on Zoom (link will be provided on Canvas). You are encouraged to email me to confirm an appointment time.

Course-related PDFs: The readings will be available on the course's Canvas site.

Learning Objectives: By the end of this course, you will be able to:

1. Understand the historical and theoretical foundations of intersdisciplinary research and practice between fields in the humanities, biophysical and social sciences.
2. Develop theoretical and methodological approaches for carrying out individual and collaborative interdisciplinary projects in both academic and non-academic settings.
3. Develop problem-focused and reflective practice skills to address current social-ecological problems in different geographical scales and socio-economic contexts.
4. Identify the principles and the legal dimensions of research ethics.
5. Understand specificities of research conducted by, with and for Indigenous peoples and other cultural groups.
6. Apply course content, methods and tools in your own research projects, as well as professional careers.
7. Identify career paths and real-world applications for inter- and transdisciplinary professionals.

Assignments: Your final grade will be calculated based on four assignments. The dates for handing in these assignments will be announced via Canvas and in class. Students are encouraged to check the Canvas platform on a daily basis. **Detailed information on these assignments can be found in the correspondent Assignment pages on Canvas**.

1. **Individual research statement (25% of total grade):**
   - Students will develop individual inter- or trans-disciplinary research statements based on current or future FIU – related research. These statements should clearly articulate the inter- or trans-disciplinary methods or tools to be used to conduct research or knowledge co-production activities. They can also propose to use Indigenous research methodologies in their projects. Students are also required to include a Positionality Statement and an Ethics Statement in their research statements.

2. **Collaborative interdisciplinary group projects (30% of total grade):**
   - Students will work in groups of around 3-5 people, to be defined according to their common interests.
   - The groups will work on collaborative inter- or trans-disciplinary projects addressing a variety of social-ecological problems in the US or internationally and should include one or more methods "families" or tools taught in the course.
   - The group projects are developing through a scaffolding approach, with 3 main steps, each one with a deadline for submission (more details on Canvas).
   - The group projects formats are flexible and may include workshop design, integrative research projects, wikipages, videos, case-study analyses, photo-stories and others. Group projects will be evaluated by the professor and peer-reviewed by the students. Students in the top one rated project will receive extra credit for this assignment, as well as earn a special Certificate issued by the instructor.

3. **Student-led forum on research methods and tools (20% of total grade):**
   - Students working on the Collaborative Interdisciplinary Group Projects will lead *one online discussion and one in-class mini-workshop* facilitated by the Professor, connected to their group projects.
   - Products of these student-led online discussions might include research notes, videos, guides and compilation of online materials and apps that can facilitate inter- and trans-disciplinary research design, communication, implementation, and evaluation. All students are expected to fully engage and contribute to these student-led discussions and mini-workshops.

4. **Online activities (25% of total grade):**
   - For each class module, students are required to participate and contribute to online learning activities based on the main weekly focus (ex: Science and Policy interface; or Research Ethics; Careers; etc).
   - These activities include readings or videos discussions, critical thinking questions, quizzes, etc., based on the class content.

Summary of assignments and grading for the class:

1. Individual research statement 25%
2. Collaborative interdisciplinary group projects 30%
3. Student-led forum on research methods and tools 20%
4. Online activities 25%

Extra credit: Extra credit options may be announced during the semester.

Other considerations: Please consider the following issues as they can influence the course's progress and students' grades.

Canvas platform – All students must be registered and familiar with the Canvas platform. Reading materials and group discussions will be carried out via Canvas. Some class meetings may be held using the Canvas platform via its video capabilities. Professor Simone Athayde will announce those sessions in class or via email in the platform.

Style of written assignments – the formats and templates required for the written assignments will be posted on Canvas along with each assignment's details and deadlines.

Timeliness – All assignments are expected to be turned in as specified in Canvas. Late assignments received after midnight on the due date specified on Canvas will be receive a 20% discount on the earned grade, and thereafter receive another 20% reduction for the next week it is late. Written assignments will not be accepted after two weeks of the deadline.

Attendance - To succeed in this course, you are expected to attend all face-to-face classes on Campus. Course materials, exercises and discussions presented in class are the responsibility of the student. A missed class is not an explanation for poor performance on assignments. While there is no formal grade for attendance, class attendance in this course and participation during discussions is important. If you have a valid situation (health-related or otherwise) that seriously affects your attendance, you must speak to the professor right away at the beginning of the course. Attendance will be tracked and can influence final grades if there is a significant and consistent attendance problem that is not justified by the student.

Notes on academic integrity - The faculty of the School of International and Public Affairs (SIPA) believe that the conduct of a student registered or taking courses in the School should be consistent with that of a professional person. Courtesy, honesty, and respect should be shown by students toward faculty members, guest lecturers, administrative support staff, and fellow students. Similarly, students should expect faculty to treat them fairly, showing respect for their ideas and opinions and striving to help them achieve maximum benefits from their experience in the School.

Student academic misconduct refers to behavior that may include plagiarism, cheating, fabrication, falsification of records or official documents, intentional misuse of equipment or materials (including library materials), and aiding and abetting the perpetration of such acts. *The preparation of reviews and essays, assigned on an individual basis, must represent each student's own effort and must not reproduce verbatim previously published material, including from the Internet*. Quoted material must be described as such and appropriately set apart with quotation marks, and all sources must be identified with in-text citation and in a "References cited" section. Reference sources should be indicated clearly when quoting prior texts (internet or otherwise).

Laptops, tablets, phones - Students may use these devices to take notes as part of the course. Please do not use these devices in class to email, IM, text message, update your social media, or browse the web in ways not related to class activity. These activities will limit your ability to engage in the class discussion and can distract other students.

Students with disabilities - Student with disabilities who require academic accommodations should contact the Services for Students with Disabilities area of the Office of the Dean of Students at (305) 471-6259 (voice) or (305) 471-4641 as soon as possible to request an official letter outlining the needed and authorized accommodations.

FIU Diversity, Equity and Inclusion (DEI) Statement: Florida International University values diversity, equity, and inclusion as integral to our mission as a student-centered public research university strongly focused on learning, research, entrepreneurship, innovation, and creativity so that its graduates are prepared to succeed in a global market. FIU embraces and strives to ensure that a diversity of cultures, races and ethnicities, genders, political and religious beliefs, physical and learning differences, sexual orientations and identities is thriving on our campus and within our community.

We recognize our responsibility to foster an open, welcoming, and inclusive environment of belonging. Students, faculty, staff, alumni, and our community of all backgrounds should be able to collaboratively learn and work. Diversity enriches our university community and is a driving force instrumental to our institutional success.

Diversity, inclusion and equity principles and practices are embraced and emphasized in this course's design, activities, and assignments. Students are encouraged to provide insights and feedback to enhance the integration of DEI principles in this course.

CLASS SCHEDULE (subject to small changes and adjustments)

Each week, students are required to complete online activities related to class content, which will be announced on Canvas always on the week prior to the week they are due.

WEEK	DATES	TOPIC	READINGS
1	August 22-28	Introduction to the course: Inter- and trans-disciplinarity from theory to practice	n/a
2	August 29-Sept. 04	Historical, theoretical and critical foundations: scientific knowledge, epistemologies, and power	Latour, 1988 Sousa Santos, 2007 Weingart, 2010
3-4	September 05-18	- Inter- and transdisciplinary research design: quantitative, qualitative, and mixed methods - Ethics discussion - September 5: Labor day, no classes	Creswell, 2018 Lele and Norgaard, 2005 Cordner et al. 2012
5	September 19-25	Complex social-ecological systems theory, methods and applications	Biggs et al., 2022 Binder et al., 2013
6	September 26-Oct. 02	Participatory research: power to the people **Interdisciplinary projects presentations & Student-led forum activity 1** Mid-term class evaluation survey	Chambers, 1994 Athayde et al., 2017
7	October 03-09	- Indigenous research methodologies **- Interdisciplinary projects presentations & Student-led Forum activity 2**	Whyte, 2013 Chilisa, 2019
8-9	October 10-23	- Bridging the Science-Policy interface - Scenarios as a decision-making tool **- Interdisciplinary projects presentations & Student-led Forum activity 3**	Funtowicz and Ravetz, 2020 Cortner, 2000
10	October 24-30	- Case-study analysis in research and teaching **- Interdisciplinary projects presentations & Student-led Forum activity 4** **- Individual research statement assignment due on October 30, 2022 by 11:59 pm.**	Quintão et al., 2021 Baxter and Jack, 2008 Teegavarapu and Summers 2008

Class Schedule – Continuation.

WEEK	DATES	TOPIC	READINGS
11-13	November 07-20	- Mapping relationships: stakeholder and social network analysis methods and applications **- Group projects presentations, Part 1**	Athayde et al., 2019 Morel et al., 2009 Reed et al., 2009
14	November 21-27	- Academic structures and careers - Publishing inter and transdisciplinary research - Thanksgiving break: November 24-27	Leahey and Barringer, 2020 Houser et al. 2021
15	November 28-Dec.04	**- Group projects presentations, Part 2** - Conclusion and evaluation	n/a
16	December 05-10	**Group projects final deadline**: December 07, 2022, by 11:59 pm.	n/a

Readings (required and additional):

Armitage, D. R., R. Plummer, F. Berkes, R. I. Arthur, A. T. Charles, I. J. Davidson-Hunt, A. P. Diduck, N. C. Doubleday, D. S. Johnson, M. Marschke, P. McConney, E. W. Pinkerton and E. K. Wollenberg. 2009. Adaptive Co-Management for Social-Ecological Complexity. *Frontiers in Ecology and the Environment* 7 (2): 95-102.

Athayde, S. F., W. L. Bartels, R. Buschbacher, and R. D. R. Seluchinesk. 2013. Collaborative learning, transdisciplinarity and social-environmental management in the Amazon: approaches to knowledge production between academia and society. *RBPG* 10(21): 723-748. Available at: http://ojs.rbpg.capes.gov.br/index.php/rbpg/article/viewFile/583/423

Athayde, S.; J. Silva-Lugo; M. Schmink; A. Kaiabi; and M. Heckenberger. 2017. Reconnecting art and science for sustainability: learning from indigenous knowledge through participatory action-research in the Amazon. *Ecology and Society* 22(2):36. https://doi.org/10.5751/ES-09323-220236

Athayde, S.; M. Mathews; S. Bohlman; W. Brasil; C. R. C. Doria; J. Dutka-Gianelli; P. M. Fearnside; B. Loiselle; E. Marques; T. Melis; B. Millikan; E. Moretto; A. N. Rossete; R. Vacca; A. Oliver-Smith and D. Kaplan. 2019. Mapping Research on Hydropower and Sustainability in the Brazilian Amazon: Advances, Gaps in Knowledge and Future Directions. Current Opinion in Environmental Sustainability 37: 50-69. https://doi.org/10.1016/j.cosust.2019.06.004

Baxter, P. and S. Jack. 2008. Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. The Qualitative Report Volume 13 Number 4 December 2008 544-559. http://www.nova.edu/ssss/QR/QR13-4/baxter.pdf

Becker S. and A. Bryman (ed.) 2005. Understanding research for social policy and practice: themes, methods and approaches, The Policy Press, Bristol, United Kingdom.

Bernard, H. R. 2013. Social research methods: qualitative and quantitative approaches. Los Angeles, SAGE. (no need to purchase the book)

Biggs, R.; A. Vos; R. Preiser; H. Clements; K. Maciejewski; and M. Schluter. 2022 The Routledge Handbook of Research Methods for Social-ecological Systems. Routledge: Oxon and New York.

Binder, C. R., J. Hinkel, P. W. G. Bots, and C. Pahl-Wostl. 2013. Comparison of frameworks for analyzing social-ecological systems. Ecology and Society 18(4): 26. http://dx.doi.org/10.5751/ES-05551-180426

Brugha, R. and Z. Varvasovsky. 2000. Stakeholder analysis: a review. *Heath Policy and Planning* 15 (3): 239-246.

Cash, D. W., W. C. Clark, F. Alcock, N. M. Dickson, N. Eckley, D. Guston, J. Jäger, and R. B. Mitchell. 2003. Knowledge Systems for Sustainable Development. *PNAS* 100 (14): 8086-8091.

Chambers, R. 1994. The Origins and Practice of Participatory Rural Appraisal. *World Development* v. 22, n.7, p. 953-969.

Chilisa, B. 2020. *Indigenous Research Methodologies*. 2 ed. Sage: Thousand Oaks. Available at: https://vdoc.pub/download/indigenous-research-methodologies-4m8mqe7vo4q0

Cordner A, Ciplet D, Brown P, Morello-Frosch R. Reflexive Research Ethics for Environmental Health and Justice: Academics and Movement-Building. Soc Mov Stud. 2012;11(2):161-176. doi: 10.1080/14742837.2012.664898. Epub 2012 Apr 2. PMID: 22690133; PMCID: PMC3370411.

Cortner, H. J. 2000. Making science relevant to environmental policy. *Environmental Science and Policy* 3: 21-30.

Creswell, J. W. 2018. *Research design: qualitative, quantitative and mixed approaches*. 4th ed. Thousand Oaks, Sage. (no need to purchase the book)

Drost, E. 2010. Validity and reliability in social science research. Education Research and Perspectives 38 (1): 105:123. Available at: (18) (PDF) Validity and Reliability in Social Science Research (researchgate.net)

Freire, P. 2006. *Pedagogy of the Oppressed, 30th Anniversary ed.* New York: Continuum. (no need to purchase the book)

Funtowicz, S. and J. Ravetz. 2020. Post-Normal Science: How Does It Resonate With the World of Today? In: Šucha, V. and M. Sienkiewicz (eds.) 2020. *Science for Policy Handbook*. Elsevier: European Union, pp 14-18. DOI: https://doi.org/10.1016/C2018-0-03963-8

Hanneman, Robert A. and Mark Riddle. 2005. *Introduction to social network methods*. Riverside, CA: University of California, Riverside. Available on-line: http://faculty.ucr.edu/~hanneman/nettext/

Houser, M.; A. Sullivan, T. Smiley, R. Muthukrishnan, E. Grennan Browning, A. Fudickar, P. Title, J. Bertram, M. Whiteman; What fosters the success of a transdisciplinary environmental research institute? Reflections from an interdisciplinary research cohort. Elementa: Science of the Anthropocene 21 January 2021; 9 (1): 00132. doi: https://doi.org/10.1525/elementa.2020.00132

Kainer, K.; M. Schmink; H. Covert; J.R. Stepp; E. Bruna; J. Dain; S. Espinosa and S. Humphries. 2006. A Graduate Education Framework for Tropical Conservation and Development. *Conservation Biology* v. 20, n.1, 2006, p. 3-13.

Klein, J. T. 2011. Creating interdisciplinary campus cultures: a model for strength and sustainability. San Francisco, Josseu-Bass/Association of American Colleges and Universities. In: Tempel, E. R., T. L. Seiler, E. E. Aldrich (eds.). 2011. *Achieving Excellence in Fund Raising*, Jossey-Bass, San Francisco.

Latour, B. 1998. From the World of Science to the World of Research? Essays on Science and Society. *Science* 10 April 1998: Vol. 280 no. 5361 pp. 208-209. http://www.sciencemag.org/content/280/5361/208.full

Leahey, E. and S. N. Barringer. 2020. Universities' commitment to interdisciplinary research: To what end? Research Policy, Volume 49, Issue 2, 2020. https://doi.org/10.1016/j.respol.2019.103910

Lélé, S. and R. B. Norgaard, Practicing Interdisciplinarity, *BioScience*, Volume 55, Issue 11, November 2005, Pages 967–975, https://doi.org/10.1641/0006-3568(2005)055[0967:PI]2.0.CO;2

McMynowski, D. P. 2007. Pausing at the brink of interdisciplinarity: power and knowledge at the meeting of social and biophysical science. *Ecology and Society* 12(1): 20. [online] URL: http://www.ecologyandsociety.org/vol12/iss1/art20/

Morel, C. M., S. J. Serruya, G. O. Penna and R. Guimarães. 2009. Co-autorship network analysis: a powerful tool for strategic planning of research, development and capacity building programs on neglected diseases. *PLos Neglected Tropical Diseases* 3 (8): e501. http://www.plosntds.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pntd.0000501&representation=PDF

Noorden, R. V. 2015. Interdisciplinary Research by the Numbers. *Nature* 525: 306-307, 17 Sept 2015.

Pohl, C., G. Wuelser, P. Bebi, H. Bugmann, A. Buttler, C. Elkin, A. Grêt-Regamey, C. Hirschi, Q. B. Le, A. Peringer, A. Rigling, R. Seidl, and R. Huber. 2015. How to successfully publish interdisciplinary research: learning from an Ecology and Society Special Feature. *Ecology and Society* 20(2): 23. http://dx.doi.org/10.5751/ES-07448-200223

Quintão, C., Andrade, P., & Almeida, F. (2021). How to Improve the Validity and Reliability of a Case Study Approach?. Journal of Interdisciplinary Studies in Education, 9(2), 264–275. https://doi.org/10.32674/jise.v9i2.2026

Reed, M; A. Graves; N. Dandy; H. Posthumus; K. Hubacek; J. Morris; C. Prell; C. H. Quinn; and C. Lindsay. 2009. Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management* 90 (5):1933-1949. https://www.sciencedirect.com/science/article/pii/S0301479709000024?via%3Dihub

Sousa Santos, Boaventura de. "Beyond Abyssal Thinking: From Global Lines to Ecologies of Knowledges." Review (Fernand Braudel Center) 30, no. 1 (2007): 45–89. http://www.jstor.org/stable/40241677.

Smith, L. T. 2012. *Decolonizing Methodologies. Research and Indigenous Peoples*. 2nd ed. London and New York, Zed Books. (no need to purchase the book)

Teegavarapu, S. and J. Summers. 2008. Case-study method for research design. In *Proceedings of IDETC/DTM* 2008. New York City, August 3-6, 2008. file:///C:/Users/User/Downloads/DETC2008-casestudiesindesign-02-09-08.pdf

Tress B, Tress G, Fry G. 2006. Defining concepts and the process of knowledge production in integrative research. In: Tress B, Tress G, Fry G, Opdam P, editors. *From landscape research to landscape planning*. Dordrecht: Springer. pp. 13–26.

Weingart, P. 2010. A short history of knowledge formations. In: R. Frodeman (ed). 2010. *The Oxford Handbook of Interdisciplinarity*. Oxford, New York, Oxford University Press. Pp. 3-14. (no need to purchase the book)

Whyte, K. P. 2013. On the role of traditional ecological knowledge as a collaborative concept: a philosophical study. *Ecological Processes* 2:7. http://www.ecologicalprocesses.com/content/2/1/7

Žukauskas, P, J. Vveinhardt, and R. Andriukaitiene. 2018. Research Ethics. In: Žukauskas, P, J. Vveinhardt, and R. Andriukaitiene (eds.) *Management Culture and Corporate Social Responsibility*. IntechOpen, online: http://dx.doi.org/10.5772/intechopen.70629

About the Instructor:

Dr. Simone Athayde is an Associate Professor with a joint appointment in the Department of Global and Sociocultural Studies (GSS) and the Kimberly Green Latin American and Caribbean Center (LACC) at FIU. She is trained as an environmental anthropologist and interdisciplinary ecologist, interested in advancing theoretical and methodological approaches for inter- and trans-disciplinary research and co-production of knowledge between the biophysical and the social sciences, as well as between academia and society. She holds a bachelor's degree in Biology, Specialization in Environmental Education and two master's degrees, in Botany (UFPR, Brazil) and in Ethnobotany (University of Kent, UK). In 2010, she earned her doctoral degree in Interdisciplinary Ecology from University of Florida (UF), with concentration in Anthropology and a certificate in Tropical Conservation and Development (TCD). She has carried out extensive training and research activities in collaboration with universities, NGO's and indigenous organizations, as well as long-term ethnographic and participatory research among Indigenous peoples across the Amazon. Dr. Athayde was a Coordinating Lead Author of the Methodological Assessment on the Diverse Values and Valuation of Nature and its Contributions to People of the Intergovernmental Science-Policy Panel on Biodiversity and Ecosystem Services (IPBES). She was also a Lead Author of the Science Panel for the Amazon (SPA), an initiative of the United Nations Sustainable Solutions Networks. Her work has been widely published and recognized with awards from the University of Florida Tropical Conservation and Development Program, from the International Society of Ethnobiology, from the Brazilian Ministry of Culture, and from the Center for Entrepreneurship and Innovation at UF.