Co-funded by the European Union

EUROPEAN UNIVERSITY FOR CUSTOMISED EDUCATION

STUDY GUIDE

Smart Sustainability in Tourism: AI Tools and Solutions for Tourism Transformation 26-27 S1

Organised by

Polytechnic Institute of Viseu and University of Cantabria

1. IDENTIFYING DATA.	
· Course Name.	Smart Sustainability in Tourism: AI Tools and Solutions for Tourism Transformation 26-27 S1
· Coordinating University.	Polytechnic Institute of Viseu
· Partner Universities Involved.	University of Cantabria
· Course Field(s).	Tourism Management
· Related Study Programme.	Not related
· ISCED Code.	1015 ; 0413
· SDG.	11
· Study Level.	B ; M
· EUNICE Key Competencies	• Green – strongly • Orange - moderately • Red – partially • Blank cell - not at all

Problem solving	
Teamworking	
Communication	
Self-management	
Cognitive flexibility	
Digital competence	
Technical competence	
Global intercultural competence	

· Number of ECTS credits allocated.	3 ECTS
· Mode of Delivery.	Online live

· Language of Instruction.	English
· Course Dates.	28.09.2026 – 14.12.2026
· Precise Schedule of the Lectures.	Each Monday, Weekly, 16:00 – 18:00 (GMT hour)
· Key Words.	1. Smart Sustainability 2. Sustainable Tourism 3. Digital Transformation 4. Green Technology 5. Responsible Tourism
· Catchy Phrase.	"AI is revolutionizing sustainable tourism: this course is a game-changer!"

· Prerequisites and co-requisites.	EUNICE students; Preference may be given to candidates with academic or professional backgrounds in tourism, sustainability, technology, or similar disciplines; B2 level
· Number of EUNICE students that can attend the Course.	20
Number of EUNICE students that can attend the course per institution	5
· Course inscription procedure(s).	Standard EUNICE process

2. CONTACT DETAILS.	
· Department.	Management/ESTGV
· Name of Lecturer.	Bruno Emanuel Morgado Ferreira
· E-mail.	morgado.ferreira@estgv.ipv.pt
· Other Lecturers.	From IPV: José Luís Mendes Loureiro Abrantes From UC: Jésus Collado, Patricia Martínez, Inna Alexeeva

3. COURSE CONTENT.

"Smart Sustainability in Tourism: AI Tools and Solutions for Tourism Transformation" is a postgraduate course, where we examine how artificial intelligence and sustainable tourism interact. With a worldwide focus, the course gives learners the advanced AI tools and useful tactics they need to address urgent tourism issues including carbon reduction, resource efficiency, and encouraging responsible travel. To help tourism firms and destinations move towards more intelligent, sustainable models, students will explore innovative AI applications, data-driven decision-making, and technology-driven solutions. Participants will acquire the abilities and information necessary to

bring about revolutionary changes in the travel and tourism sector while encouraging environmental and cultural stewardship through practical case studies, engaging projects, and hands-on training.

This course, which requires a bachelor's degree and English proficiency (B2 CEFR or equivalent), is perfect for people who are enthusiastic about sustainability and technical innovation.

4. LEARNING OUTCOMES.

Students who successfully complete this course will be eligible to:
- Describe the main ideas and frameworks of sustainable tourist development and how artificial intelligence might improve them.
- Determine whether AI technologies are relevant to the sustainability issues facing the tourism industry.
- Recognize the detrimental consequences of tourism on the environment, society, and economy and how AI may help reduce them.
- Recognize potential biases and ethical issues when implementing AI in tourism contexts.
- Know the fundamentals of implementing AI responsibly in destination management Technical Skills.

Students will gain the capacity to:
- Use analytics tools driven by AI to examine and evaluate tourism data.
- Use fundamental machine learning algorithms to forecast and evaluate the impact of tourism demand.
- Create digital solutions that lessen the tourism industry's carbon footprint.
- Make use of AI technologies to track and evaluate sustainability metrics.
- Create clever programs that will improve tourist experiences and encourage environmentally friendly behavior.
- Make dashboards with data visualization to share sustainability metrics with stakeholders.
Strategic Proficiencies.

Graduates will have the skills to:
- Examine how new technology might be able to help with certain sustainability issues in the travel industry.
- Create all-encompassing digital transformation plans for travel agencies.
- Create AI-powered solutions that strike a balance between sustainability and business objectives.
- Evaluate the return on investment and the social and environmental effects of implementing AI in tourism settings.
- Oversee interdisciplinary groups in the application of technology for environmentally friendly travel.
- Communicate to a variety of stakeholders the benefits of AI-enabled sustainability projects in an effective manner.
- Career Advancement

Through the course, students will be able to:
- Examine critically the ethical ramifications of technical advancements in the travel industry.
- Work together with a range of stakeholders to create inclusive smart travel solutions.
- Adjust to the ever-changing technological world and the demands of sustainability.
- Encourage responsible innovation in the management of tourism
- Use systems thinking to tackle difficult sustainability issues in tourism.
- Take the lead in promoting sustainable digital change in travel agencies.

5. OBJECTIVES.

1. Acquire In-depth Knowledge of AI Applications in Sustainable Tourism
2. Develop Technical Expertise in AI Data Analysis for Tourism
3. Create Innovative Digital Solutions to Reduce Environmental Impact
4. Promote Ethical Use of AI in Tourism Settings
5. Build Strategic Leadership Skills for Digital Transformation
6. Enhance Communication and Teamwork Among Stakeholders
7. Balance Sustainability Goals with Business Objectives
8. Prepare for Leadership Roles in Innovative Sustainable Tourism

6. COURSE ORGANISATION.

UNITS	
1.	AI Applications in Destination Management: Gain knowledge on how to best allocate resources and control tourist flows to improve operational effectiveness and visitor happiness
2.	Using AI to Prevent Overtourism: Learn how to track visitor numbers, anticipate peak times, and put solutions in place that strike a balance between sustainability and demand, all of which can directly help travel businesses
3.	Smart Data Analytics for Sustainable Tourism: Learn how to use operational and customer data to find patterns, preferences, and tactics for expedited decision-making that enhances personalization and service quality
4.	Digital Solutions for Carbon Footprint Reduction: Investigate AI-driven solutions that reduce environmental effect and appeal to eco-conscious consumers, such as automated resource consumption tracking or energy-management systems
5.	Technology for Tailored and Environmental Visitor Experiences: Discover how to create experiences that satisfy the interests of specific clients while adhering to environmental standards, which will improve lodging and eating offerings
6.	Ethical Considerations in AI Implementation: Recognize and resolve important concerns like as bias, transparency, and data privacy in AI systems to ensure responsible use and foster consumer trust

LEARNING RESOURCES AND TOOLS.

Learning Resources:

1. Core Texts and Publications:
    - Academic journals on AI in tourism (e.g., *Journal of Sustainable Tourism*, *Tourism Management*, *Annals of Tourism Research, …*).
    - Recent books or reports on AI applications in sustainable tourism and smart tourism destinations.
2. Case Studies and Industry Reports:
    - World Tourism Organization (UNWTO) reports on sustainable tourism and AI.
    - World Economic Forum publications on sustainable AI practices.
3. AI and Technology Guides:
    - Manuals or tutorials for AI platforms like Google AI tools, or Microsoft Azure AI tailored to the tourism industry.
    - Industry-specific resources on machine learning for tourism demand forecasting or sentiment analysis of traveler reviews.
4. Sustainability Standards and Guidelines:
    - Global Sustainable Tourism Council (GSTC) criteria.
    - Reports on green technology in tourism (e.g., carbon offset tools for travel).
5. Videos and Webinars:
    - TED Talks on AI and sustainability innovation.
    - Industry webinars from tourism organizations and AI providers.
6. Research Databases:
    - Access to academic databases like Google Scholar, ScienceDirect, and SpringerLink for sourcing scholarly articles.
    - Open educational resources (OERs) on AI and sustainability.

Recommended Tools:

1. AI Tools for Tourism:
    - ChatGPT (OpenAI) or similar platforms for customer service and itinerary optimization.
    - Tableau or Power BI for tourism data visualization.
    - Sentiment analysis tools (e.g., MonkeyLearn or a similar tool) for understanding tourist feedback.
2. E-learning Platforms:
    - Moodle.
    - Virtual meeting platforms Zoom.
3. Data Sources:
    - Tourism statistics databases (e.g., UNWTO or Statista).
    - Social media analytics platforms for real-time tourism trends.
4. Sustainability and Carbon Calculation Tools:

- Tools such as MyClimate or Carbon Calculator for measuring and understanding sustainable tourism practices.

5. Collaboration Tools:
   - Trello or Slack for online group projects.
   - Google Workspace for shared documents, presentations, and collaboration.

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS.

1. Interactive Online Lectures (8 hours)
   - Multimedia presentations and synchronous meetings to introduce key concepts and theories.

2. Interactive Virtual Labs (4 hours)
   - Guided sessions to test and adopt AI tools for sustainable tourism, providing hands-on experience.

3. Case Studies of the Industry (3 hours)
   - Cooperative evaluation of practical AI applications in eco-friendly travel, analyzing real-world examples.

4. Virtual Group Project (5 hours)
   - Collaborative work in small groups to develop AI-based solutions for sustainable tourism challenges.

5. Webinars Featuring Guest Experts (2 hours)
   - Online presentations by scholars and industry professionals, offering insights and expertise.

6. Online Technical Tutorials (2 hours)
   - Step-by-step guides for using specific AI tools and technologies relevant to sustainable tourism.

7. Presentations of the Final Project (2 hours)
   - Virtual presentations and evaluations of the group's AI-based solutions, with peer and instructor feedback.

7. ASSESSMENT METHODS, CRITERIA AND PERIOD.

Final assessment is graded from 0 to 20.
To evaluate both technical proficiency and conceptual knowledge, the course will be evaluated using a variety of components:
Formative Evaluations (30%);
Participation in Weekly Discussions (10%): Consistently participating in online forums concerning case studies and readings;
Practical Lab Exercises (10%): Finishing online lab assignments and technical tutorials;

Midterm Test (10%): Online evaluation evaluating core AI ideas and sustainable tourism concepts
Project in Group (30%);
AI Solution Prototype (20%): Creation of an AI-powered solution to a problem in sustainable travel;
Group Presentation (10%): Project presentation to teachers and peers via virtual means;
Individual Final Project (40%);
Technical Implementation (20%): Creation of an analytical model or AI application for eco-friendly travel;
Final Report (15%): Detailed documentation that includes outcomes analysis, implementation specifics, and methodology.
Final Presentation (5%): A succinct overview of the solution's capabilities and effects.

Evaluation Timetable
Weeks 1 through 5: Formative evaluations;
Week 6: Test of the midterm;
Weeks 7–10: Presentations and group projects.
Weeks 11–13: Development of individual final projects.
Last week: submitting the project and giving presentations.
Every assignment will be turned in via the online learning environment, and each evaluation component will have its own comprehensive rubric.

OBSERVATIONS.

8. BIBLIOGRAPHY AND TEACHING MATERIALS.

Abid, R., Saha, P., & Islam, M. M. (2025). The Impact of Artificial Intelligence (AI) for Transforming Tourism Marketing on the USA Industry Practices. Journal of Information Systems and Informatics, 7(1), 393-422.

Aigbokhai, G., Bahcelerli, N. M., Akyurek, S., Altinay, M., & Kenebayeva, A. (2024). The Impact of Artificial Intelligence (AI) and Digitalisation in Tourism Vocational Education. BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 15(4), 265-282.

Dogru, T., Line, N., Mody, M., Hanks, L., Abbott, JA., Acikgoz, F., Assaf, A., Bakir, S., Berbekova, A., Bilgihan, A., Dalton, A., Erkmen, E., Geronasso, M., Gomez, D., Graves, S., Iskender, A., Ivanov, S., Kizildag, M., Lee, M., Zhang, T. (2025). Generative Artificial Intelligence in the Hospitality and Tourism Industry: Developing a Framework for Future Research. Journal of Hospitality and Tourism Research, 49(2), 235-253.

Edgell, Sr., D.L., Swanson, J.R., Allen, M.D., Smith, G., Edgell, Sr., D.L., & Swanson, J.R. (2018). Tourism Policy and Planning: Yesterday, Today, and Tomorrow (3rd ed.). Routledge.

Egger, R. (2022). Applied data science in tourism. Springer International Publishing.

Joshi, S. (2022). Sustainable Tourism Supply Chain Management. Springer.

Kim, H., So, K. K. F., Shin, S., & Li, J. (2025). Artificial intelligence in hospitality and tourism: Insights from industry practices, research literature, and expert opinions. Journal of Hospitality & Tourism Research, 49(2), 366-385.

Lina, F. Y. & Talukder, M. B. (2025). AI in Tourism: Business and Economic Perspectives. In M. Lytras, P. Ordonez, A. Alkhaldi, & A. Serban (Eds.), Innovation Management for a Resilient Digital Economy (pp. 81-104). IGI Global Scientific Publishing.

Morrison, A.M., & Buhalis, D. (Eds.). (2023). Routledge Handbook of Trends and Issues in Global Tourism Supply and Demand (1st ed.). Routledge.