This section introduces the environmental context, the motivating question, the broader significance of the issue, and the role AI will play in the learning process. It should also include instructor notes on course fit, prerequisite knowledge, estimated time, and options for implementation at different levels.

Part A: Foundations

Part A introduces the environmental system, the dataset, the scientific concepts, and the AI workflow. Students receive high scaffolding here: background reading, orientation to the dataset, guided prompt examples, and explicit verification expectations. Instructors can use this section as the on-ramp for novices.

Typical Part A tasks:

- Explore the environmental theme and question.
- Learn the structure and limitations of the dataset.
- Practice one or two bounded AI-supported tasks.
- Use a verification checklist to compare AI output against source material or metadata.

Part B: Inquiry and analysis

Part B increases student independence. Students use data to investigate a question, employ AI for selected analytical or interpretive steps, and work collaboratively to test and refine findings. This stage should include peer discussion, comparison of approaches, and instructor checkpoints to ensure that AI support strengthens rather than replaces reasoning.

Typical Part B tasks:

- Refine or extend the research question.
- Conduct data cleaning, visualization, or analysis.
- Use AI to draft code, summarize patterns, or suggest interpretations.
- Critique and revise AI-supported outputs with peers and instructor guidance.

Part C: Synthesis and communication

Part C asks students to integrate their findings and communicate them clearly. This is where the module should explicitly include a communication product, such as a short policy brief, scientific poster, community-facing infographic, slide deck, audio explanation, or annotated notebook. Students should explain both the environmental conclusions and how AI was used, checked, and revised during the investigation.

Typical Part C tasks:

- Synthesize results and evidence.
- Reflect on how AI contributed and where human judgment mattered most.
- Communicate findings for a defined audience.

- Compare local findings with pooled or network-level results when available.